UK MET OFFICE
GLOBAL DATA MONITORING REPORT

February 2005

ORGS UKMO U
11 MAR 2005
National Meteorological Library
FitzRoy Road, Exeter, Devon. EX1 3PB

Data Assimilation
Meteorological Office
Fitzroy Rd
Exeter
Devon
EX1 3PB

This report has not been published. Permission to quote from it should be obtained from the Head of Data Assimilation

Distribution List

Mr B Sumner	NMC, Victoria, Australia
Dr S. C. Chou	CPTEC/INPE, Brazil
Dr V Wagner	Deutscher Wetterdienst, Hamburg, Germany
Dr B Ballish	NCEP, Camp Springs, USA
Mr H Benichou	SCEM METEO-FRANCE.
Mr E A Meindl	National Data Buoy Centre, Stennis Space Center, USA
Mr G Verner	Canadian Meteorological Centre, Quebec, Canada
Dr R Pauley	Fleet NumericalMETOC Center, Moneterey
Permanent Rep. with WMO	Moscow, Russia
Hydrometcentre of the Russian Federation	Moscow, Russia
Mr Yukinari Ohta	JMA, Tokyo, Japan
Mr Francois Lalaurette	Head, Meteorological Operations Section, ECMWF, Reading, UK
Dr M J Uddstrom	Met. Service, Wellington, New Zealand
Mr R W Lunnon	Met. Office, Exeter, UK
Mr D Richardson	Met. Office, Exeter, UK
Mr B Oatway	Met. Office, Exeter, UK
Mr C A Parrett	Met. Office, Exeter, UK
National Meteorological Library	Met. Office, Exeter, UK

CONTENTS

1. Introduction

2. Global Data Monitoring Statistics

3. Composite Observing Systems for the North Atlantic (COSNA)

...oooOOOooo...

1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Exeter. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Exeter in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background) field, although to provide background values valid at the observation time for non-main hour data, time-interpolation of the T+3, T+6 and T+9 forecasts is used; and for sea surface temperature the background field is the analysis from the previous day. Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

Mr. D. Richardson
Observations Data Monitoring Group
Met Office
Fitzroy Road
Exeter
Devon
United Kingdom
EX1 3PB

2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Exeter and assimilated into model runs. All data are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Exeter and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Exeter and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

Figures 55-69 show sounding statistics from the polar orbitting satellite NOAA-17. Figure 55 shows the mean daily number of ATOVS soundings, and figures 56-69 show mean and standard deviation observation-background differences for brightness temperature for selected channels.

Figure		Weighting function peak (hPa)
56	Mean	Surface (HIRS8)
57	SD	Surface (HIRS8)
58	Mean	700 (HIRS15)
59	SD	700 (HIRS15)
60	Mean	500-700 (HIRS11)
61	SD	500-700 (HIRS11)
62	Mean	400 (HIRS4)
63	SD	400 (HIRS4)
64	Mean	700 (AMSUA5)
65	SD	700 (AMSUA5)
66	Mean	300 (AMSUA7)
67	SD	300 (AMSUA7)
68	Mean	100 (AMSUA9)
69	RMS	100 (AMSUA9)

N.B. All satellite sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Exeter during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Exeter in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Exeter from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.
25. December 2002. Included statistics for ATOVS sounding data from NOAA-17.
26. December 2002. Meteosat-7 and Meteosat-5 SATOB winds replaced by higher resolution BUFR-coded winds.
27. November 2003. Included temperature and relative humidity statistics for ships, fixed buoys and platforms in Table 1.
28. November 2003. NOAA 17 statistics no longer available due to malfunction of the AMSU-A instrument.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).
:Air temperature (Degrees C).
:Relative Humidity (%).
:Sea surface temperature (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:PGE :Percentage of observations with gross errors.

:%REJ :Percentage of observations flagged excluding those with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)
:15 degrees (air temperature)
:10 degrees (sea surface temperature)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias|	≥ 4 hPa	(pressure),
	≥ 5 m s^{-1}	(wind speed),
	≥ 30 degrees	(direction).
	≥ 3 degrees	(sea surface temperature).
	≥ 4 degrees	(air temperature)
	≥ 15%	(relative humidity)
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
	≥ 5 degrees	(sea surface temperature).
	≥ 6 degrees	(air temperature)
	≥ 25%	(relative humidity)
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8CF3	P	36	0	0	1.2	-6.4	6.5
A8FA5	P	40	0	2	1.0	5.9	5.9
A8FG5	P	32	0	75	1.9	-4.6	5.0
C6TC2	P	22	0	77	0.7	4.7	4.7
DEAZ	P	33	0	61	0.7	4.5	4.5
DHZQ	P	50	0	44	0.9	4.1	4.2
DIBZ	P	36	0	67	1.0	4.1	4.2
ELWP5	P	28	0	75	0.6	4.6	4.7
ELYS6	P	23	0	26	0.8	4.0	4.1
ELYY5	P	34	0	76	1.6	5.0	5.3
FQ411	P	129	100	98			
KMJL	P	41	0	2	1.2	-4.1	4.3
KS012	P	196	0	95	0.5	-5.5	5.5
KS049	P	207	0	93	0.8	-4.9	5.0
OUFA	P	93	0	69	1.2	4.6	4.8
OVYA2	P	50	0	6	1.0	4.8	4.9
OXFU2	P	36	0	3	1.4	4.0	4.2
OZUN2	P	55	0	56	2.7	4.5	5.2
PJPO	P	46	0	0	0.9	-5.0	5.1
P3JG9	P	40	0	38	0.9	-4.3	4.4
TEST	P	41	100	95			
UGGA	P	53	32	96	8.5	0.8	8.5
VTXK	P	34	3	94	1.9	5.1	5.4
V7BW8	P	41	0	80	3.5	-4.4	5.7
V7HD2	P	38	0	74	2.3	4.3	4.9
WDB9984	P	24	0	100	0.9	-7.7	7.8
ZCDF8	P	21	0	0	0.8	-4.6	4.7

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
C6QF6	SPEED	35	0	100	3.0	5.4	6.2
C6SS3	SPEED	37	0	22	4.9	7.6	9.1
C6UG4	SPEED	47	0	19	6.6	6.3	9.1
DEOT	SPEED	49	0	100	4.7	5.4	7.1
DIGW	SPEED	28	0	14	3.6	5.5	6.6
HP6038	SPEED	142	0	1	3.2	5.1	6.0
H9YY	SPEED	40	5	100	3.6	7.5	8.3
SCFH	SPEED	25	0	8	5.3	5.1	7.4
SGAK	SPEED	34	0	21	4.0	5.6	6.9
S6TV	SPEED	34	3	12	3.6	5.1	6.2
TSMU	SPEED	46	2	72	6.3	14.4	15.8
UCJO	SPEED	27	89	89	0.6	0.0	0.6
UCUQ	SPEED	66	0	8	2.9	5.0	5.8
VEP717	SPEED	212	0	4	4.0	5.4	6.7
WDA3588	SPEED	145	0	100	3.5	5.6	6.6
ZCDG7	SPEED	39	5	82	5.2	5.7	7.7
3FIQ7	SPEED	30	0	3	3.2	5.2	6.1
4XGU	SPEED	40	2	10	2.8	5.8	6.5
62147	SPEED	34	0	100	4.2	5.4	6.9

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
DBKV	DIRN.	21	0	0	8.5	*****	116.9
ELWX5	DIRN.	112	0	0	30.1	-35.9	46.8
KS045	DIRN.	67	24	0	79.6	54.4	96.4
32316	DIRN.	63	0	0	10.9	-44.9	46.2
46208	DIRN.	213	0	0	22.7	-38.2	44.4
62144	DIRN.	92	0	0	13.8	-49.7	51.6

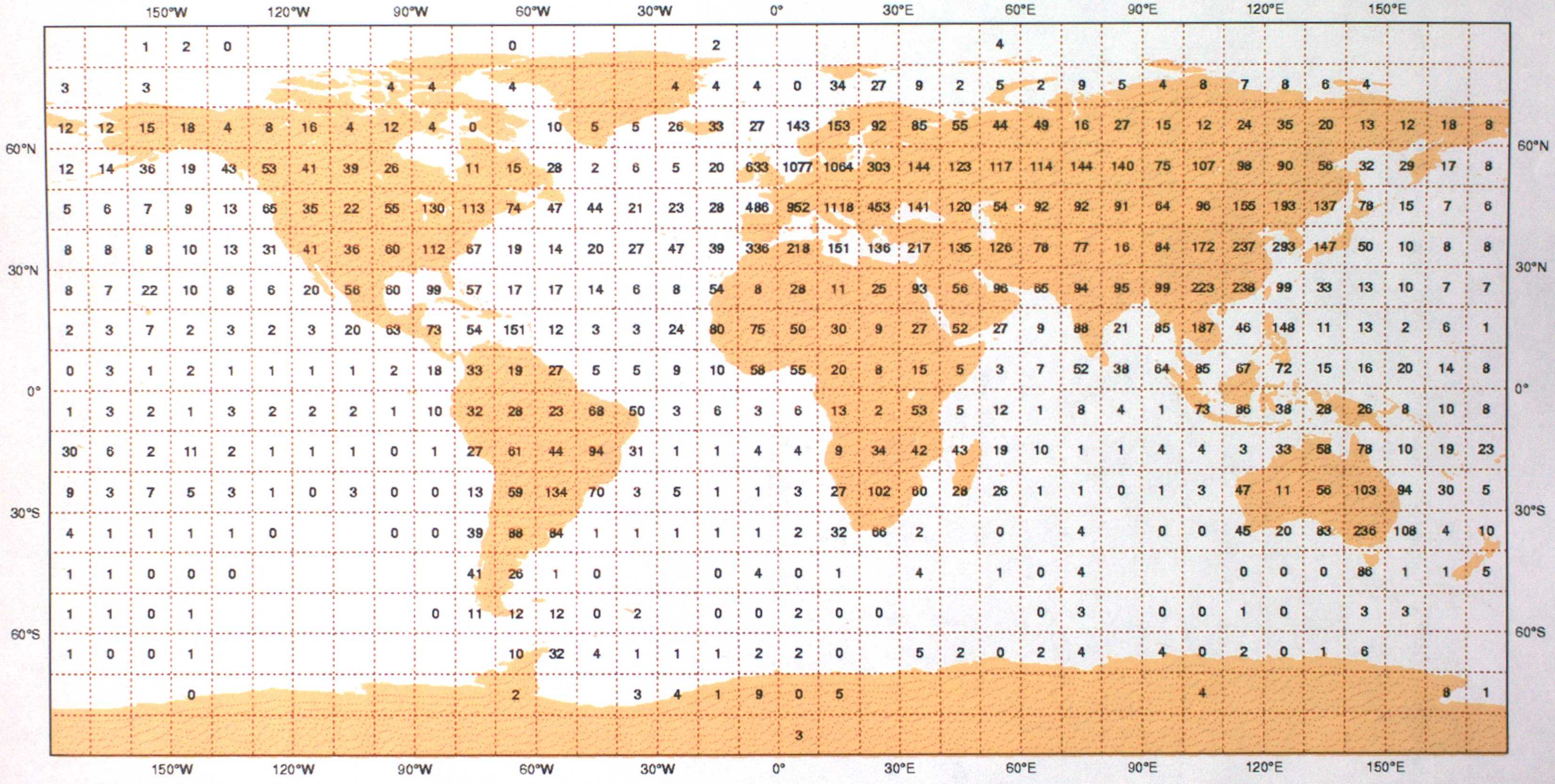
IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
FQ411	T	131	83	100	1.6	11.4	11.5
KS044	T	27	89	100	3.8	-8.1	9.0
SP33	T	107	3	100	3.8	-6.1	7.2
TEST	T	41	46	100	1.7	11.5	11.7
UCJJ	T	58	0	100	3.1	-4.6	5.6
UIAG	T	41	0	100	1.8	-4.0	4.4
WCW9126	T	102	5	100	3.8	5.7	6.9
WWU8	T	27	33	100	2.2	6.8	7.2
23096	T	309	0	100	4.1	4.2	5.9
46081	T	258	1	100	2.7	6.1	6.7
46088	T	445	0	100	3.1	5.0	5.9
46131	T	667	0	100	3.2	4.4	5.4
46146	T	661	0	100	3.0	4.8	5.6
46185	T	262	3	100	2.2	11.8	12.0

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8CI8	RH	46	0	100	11.9	16.5	20.3
A8FS8	RH	27	0	100	11.5	16.1	19.8
DBKV	RH	31	0	100	21.2	-25.3	33.0
DFPC	RH	89	0	100	12.0	19.7	23.1
DGOQ	RH	20	0	100	23.1	-17.0	28.7
ELOV9	RH	46	0	100	6.2	20.7	21.6
FNAT	RH	70	0	100	5.9	20.5	21.3
FPOD	RH	62	0	100	11.6	19.5	22.7
FQ411	RH	129	0	100	6.6	-68.0	68.3
GBSN	RH	40	0	100	11.1	15.0	18.7
HPEU	RH	20	0	100	12.7	15.4	20.0
MZNM7	RH	33	0	100	7.9	15.0	16.9
OUEW	RH	69	0	100	20.7	-37.3	42.7
SHIPX	RH	35	0	100	6.9	27.5	28.4
TEST	RH	41	0	100	3.1	-67.0	67.1
UCPE	RH	46	0	100	8.2	-50.0	50.7
VQIV8	RH	33	0	100	8.0	15.2	17.2
ZCBU2	RH	37	0	100	7.8	15.6	17.4
ZSWAV1	RH	22	0	100	15.1	-31.1	34.5
62125	RH	131	0	100	9.1	17.5	19.7
62402	RH	46	0	100	10.1	-26.0	27.9

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8CK2	SST	21	0	100	0.6	-3.2	3.3
CGDR	SST	94	0	76	1.1	4.0	4.2
C6IZ7	SST	22	0	105	1.1	4.1	4.3
C6QF4	SST	21	0	105	2.4	3.6	4.3
ELXL3	SST	45	0	100	0.4	6.2	6.2
KHRC	SST	42	0	100	0.5	-3.0	3.1
KHRP	SST	24	0	104	1.0	3.1	3.3
KRGB	SST	112	63	100	1.1	-1.7	2.0
KS035	SST	45	20	100	1.3	7.7	7.8
PHSG	SST	39	0	100	3.1	-4.7	5.6
S6IW	SST	29	31	31	0.8	-1.1	1.4
VVKV	SST	24	0	100	0.9	4.5	4.6
V7HD2	SST	28	0	0	0.4	3.3	3.3
WAAH	SST	49	0	100	0.8	3.5	3.5
WCZ5528	SST	45	0	100	1.9	-3.3	3.7
WPGJ	SST	37	0	8	0.8	-3.3	3.4
3EMQ9	SST	41	0	102	1.1	-3.5	3.7
3FDN9	SST	62	0	29	1.0	3.4	3.5

3FKM8	SST	20	0	100	2.2	-3.7	4.3
3FPA6	SST	32	0	100	0.9	6.0	6.0
3FVG8	SST	39	33	33	1.0	1.1	1.5
41008	SST	462	0	100	0.4	-4.8	4.8
42007	SST	500	0	87	0.5	-3.6	3.6
42013	SST	497	0	67	0.6	-3.1	3.1
42021	SST	498	0	100	0.5	-4.6	4.6
44014	SST	500	0	98	0.4	-4.0	4.1
44137	SST	499	0	99	0.7	4.8	4.8
44141	SST	499	0	100	0.5	-3.2	3.2
45139	SST	473	0	76	1.7	3.4	3.8
9HCH7	SST	31	0	100	0.6	3.7	3.7

Figure 1. SHIP/SYNOP mean daily count. FEBRUARY 2005
All hours
Global average number of observations in 24 hours = 21405



		1	2	0							0					2							4												
3		3						4	4		4				4	4	4	0	34	27	9	2	5	2	9	5	4	8	7	8	6	4			
12	12	15	18	4	8	16	4	12	4	0		10	5	5	26	33	27	143	153	92	85	55	44	49	16	27	15	12	24	35	20	13	12	18	8
12	14	36	19	43	53	41	39	26		11	15	28	2	6	5	20	633	1077	1064	303	144	123	117	114	144	140	75	107	98	90	56	32	29	17	8
5	6	7	9	13	65	35	22	55	130	113	74	47	44	21	23	28	486	952	1118	453	141	120	54	92	92	91	64	96	155	193	137	78	15	7	6
8	8	8	10	13	31	41	36	60	112	67	19	14	20	27	47	39	336	218	151	136	217	135	126	78	77	16	84	172	237	293	147	50	10	8	8
8	7	22	10	8	6	20	56	60	99	57	17	17	14	6	8	54	8	28	11	25	93	56	96	65	94	95	99	223	238	99	33	13	10	7	7
2	3	7	2	3	2	3	20	63	73	54	151	12	3	3	24	80	75	50	30	9	27	52	27	9	88	21	85	187	46	148	11	13	2	6	1
0	3	1	2	1	1	1	1	2	18	33	19	27	5	5	9	10	58	55	20	8	15	5	3	7	52	38	64	85	67	72	15	16	20	14	8
1	3	2	1	3	2	2	2	1	10	32	28	23	68	50	3	6	3	6	13	2	53	5	12	1	8	4	1	73	86	38	28	26	8	10	8
30	6	2	11	2	1	1	1	0	1	27	61	44	94	31	1	1	4	4	9	34	42	43	19	10	1	1	4	4	3	33	58	78	10	19	23
9	3	7	5	3	1	0	3	0	0	13	59	134	70	3	5	1	1	3	27	102	60	28	26	1	1	0	1	3	47	11	56	103	94	30	5
4	1	1	1	1	0			0	0	39	88	84	1	1	1	1	1	2	32	66	2		0		4		0	0	45	20	83	236	108	4	10
1	1	0	0	0						41	26	1	0			0	4	0	1		4		1	0	4				0	0	0	86	1	1	5
1	1	0	1						0	11	12	12	0	2		0	0	2	0	0				0	3		0	0	1	0		3	3		
1	0	0	1								10	32	4	1	1	1	2	2	0		5	2	0	2	4		4	0	2	0	1	6			
			0								2			3	4	1	9	0	5									4						8	1
																		3																	

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		: All hours
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees). :Sea surface temperature (degrees).
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	: Percentage of observations flagged excluding those with gross errors
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the wind observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
	:25 m s^{-1}	(vector wind)
	:10 degrees	(sea surface temperature)

SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
		≥ 3 degrees	(sea surface temperature).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
		≥ 5 degrees	(sea surface temperature).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
21928	32.6	142.9	P	212	23	75	4.8	6.7	8.2
21931	32.5	154.2	P	89	34	88	6.9	-5.5	8.8
25572	85.2	-34.4	P	221	32	100	6.5	-2.8	7.1
25573	81.0	137.5	P	20	40	100	7.1	-6.8	9.9
26506	84.9	14.6	P	28	29	71	8.7	2.4	9.0
33577	-35.0	-19.9	P	560	100	100			
52686	26.3	127.9	P	1650	26	83	4.6	0.2	4.6
55629	-48.2	-120.6	P	138	1	59	3.4	-4.6	5.7
61556	41.2	29.1	P	40	38	100	6.2	-5.5	8.3

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41922	21.6	-71.4	SPEED	59	100	0			
41925	21.2	-73.4	SPEED	482	1	100	3.1	-5.2	6.0

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
56506	-15.4	121.3	DIRN.	113	0	0	42.0	-95.7	104.5

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
15621	-17.5	-37.9	SST	57	0	84	1.3	-3.8	4.0
16943	-28.8	87.3	SST	479	0	79	1.6	3.3	3.7
32693	15.6	-170.7	SST	693	0	100	0.2	3.0	3.0
46972	15.4	139.7	SST	307	0	100	0.4	4.4	4.4
61556	41.2	29.1	SST	32	6	72	2.8	-3.0	4.1

Figure 2. DRIFTER mean daily count. FEBRUARY 2005
All hours
Global average number of observations in 24 hours = 18666

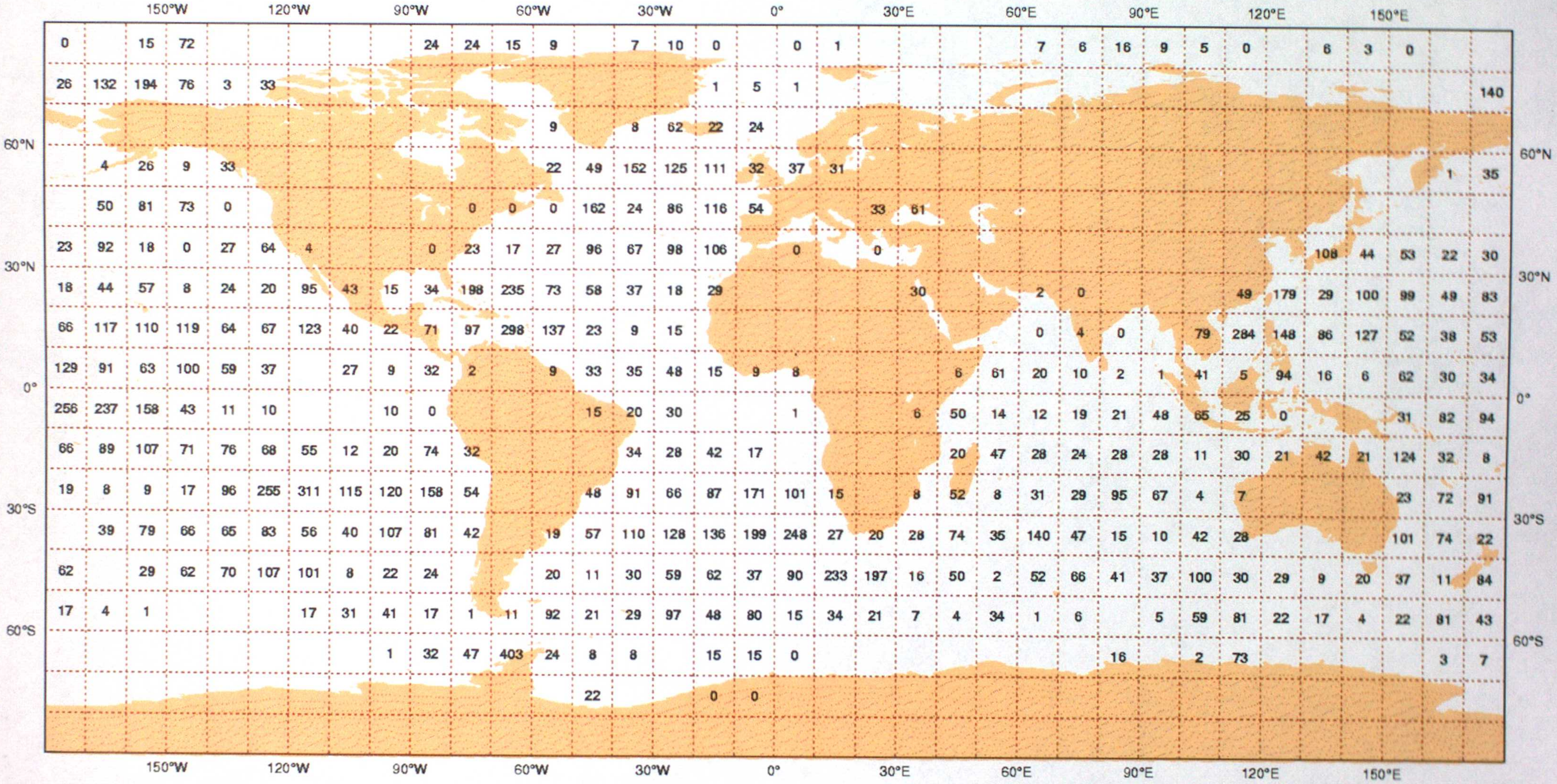

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
0 15 72 24 24 15 9 7 10 0 0 1 7 6 16 9 5 0 6 3 0
26 132 194 76 3 33 1 5 1 140
9 8 62 22 24
4 26 9 33 22 49 152 125 111 32 37 31 1 35
50 81 73 0 0 0 0 162 24 86 116 54 33 61
23 92 18 0 27 64 4 0 23 17 27 96 67 98 106 0 0 108 44 53 22 30
18 44 57 8 24 20 95 43 15 34 198 235 73 58 37 18 29 30 2 0 49 179 29 100 99 49 83
66 117 110 119 64 67 123 40 22 71 97 298 137 23 9 15 0 4 0 79 284 148 86 127 52 38 53
129 91 63 100 59 37 27 9 32 2 9 33 35 48 15 9 8 6 61 20 10 2 1 41 5 94 16 6 62 30 34
256 237 158 43 11 10 10 0 15 20 30 1 6 50 14 12 19 21 48 65 25 0 31 82 94
66 89 107 71 76 68 55 12 20 74 32 34 28 42 17 20 47 28 24 28 28 11 30 21 42 21 124 32 8
19 8 9 17 96 255 311 115 120 158 54 48 91 66 87 171 101 15 8 52 8 31 29 95 67 4 7 23 72 91
39 79 66 65 83 56 40 107 81 42 19 57 110 128 136 199 248 27 20 28 74 35 140 47 15 10 42 28 101 74 22
62 29 62 70 107 101 8 22 24 20 11 30 59 62 37 90 233 197 16 50 2 52 66 41 37 100 30 29 9 20 37 11 84
17 4 1 17 31 41 17 1 11 92 21 29 97 48 80 15 34 21 7 4 34 1 6 5 59 81 22 17 4 22 81 43
1 32 47 403 24 8 8 15 15 0 16 2 73 3 7
22 0 0

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

SUSPECT SYNOPS (PRESSURE) BY WMO REGION FEB 200

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60320	35.9N	5.4W	2	MS	59	10	17	0	0.9	-10.3	10.3
61492	16.1N	13.5W	18	MS	54	0	0	2	1.9	4.7	5.1
61816	10.9N	14.3W	69	MS	33	13	39	12	3.8	-0.5	3.8
62056	32.8N	21.9E	625	S8	90	1	1	1	1.0	-5.4	5.5
63801	4.9S	29.6E	882	S8	50	2	4	2	1.0	8.1	8.2
63881	8.0S	31.6E	1923	S	41	1	2	2	0.8	12.5	12.5
65125	9.3N	7.0E	344	M	26	2	8	0	0.8	4.0	4.1
65355	9.8N	1.1E	342	MS	97	0	0	1	1.3	-12.3	12.4
66285	11.8S	19.9E	1357	8	21	14	67	0	0.4	14.3	14.3
68014	19.6S	18.1E	1411	S8	78	0	0	0	0.7	-7.0	7.0
68030	18.5S	25.6E	1071	8	81	0	0	0	4.4	9.5	10.5
68102	19.9S	16.4E	1343	S8	81	0	0	0	0.7	5.8	5.8
68312	26.5S	18.1E	1067	S8	77	0	0	0	0.6	4.9	4.9
68325	25.4S	25.4E	1275	8	73	0	0	0	0.9	4.6	4.7
68396	26.5S	31.3E	641	S8	54	0	0	2	1.4	4.7	4.9
68575	30.0S	30.0E	1175	S8	111	111	100	0			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
28615	55.2N	53.8E	125	MS	63	0	0	63	1.2	-4.2	4.4
30554	54.5N	113.6E	995	MS	112	0	0	0	0.8	12.5	12.5
35416	49.1N	54.7E	128	S	110	0	0	0	0.7	4.8	4.9
36982	41.9N	78.2E	3635	S7	111	0	0	0	0.9	5.5	5.6
38565	40.6N	65.7E	485	MS	112	112	100	0			
38846	38.4N	70.0E	1437	S8	50	1	2	6	3.5	-5.5	6.5
40435	27.0N	44.1E	991	MS	54	0	0	0	1.5	6.9	7.1
40700	39.6N	47.9E	45	MS	107	1	1	1	0.9	-6.1	6.2
40713	37.4N	46.3E	1475	MS	106	10	9	0	0.8	13.5	13.5
40726	36.8N	45.7E	1384	MS	101	1	1	2	2.2	4.3	4.8
40741	36.5N	61.2E	235	MS	104	0	0	0	0.8	-5.2	5.3
40743	36.2N	57.7E	978	MS	109	1	1	0	0.8	5.3	5.4
40757	35.6N	53.4E	1171	MS	106	0	0	0	1.0	5.2	5.3
40780	33.6N	46.4E	1362	MS	111	0	0	0	0.6	4.7	4.7
40854	29.1N	58.4E	1067	MS	108	1	1	0	1.7	10.4	10.5
41254	23.1N	57.6E	1755	S8	111	111	100	0			
41396	16.0N	48.9E	700	MS	38	0	0	0	1.4	6.6	6.7
44212	50.0N	92.1E	940	MS	112	0	0	31	1.7	5.0	5.3
47022	40.8N	128.2E	1224	S	106	0	0	0	1.1	4.9	5.0
47155	35.2N	128.6E	5	MS	110	0	0	72	1.0	-4.2	4.3
47678	33.1N	139.8E	79	MS	112	0	0	0	0.8	-9.3	9.3
48924	21.1N	101.5E	644	S	52	1	2	0	1.4	11.5	11.6
48925	20.7N	102.0E	550	S	50	0	0	0	1.2	-10.0	10.1
48938	19.2N	101.7E	326	MS	52	28	54	0	0.5	14.0	14.0
48952	15.7N	106.4E	168	MS	46	0	0	2	1.4	-4.5	4.7
50727	47.2N	119.9E	1028	MS	112	0	0	0	0.8	4.8	4.9
50978	45.3N	130.9E	234	MS	112	0	0	0	0.7	-6.2	6.2
51243	45.6N	84.9E	428	MS	112	0	0	0	1.1	-5.3	5.4
51288	45.4N	90.5E	1651	S	112	0	0	1	1.1	-6.0	6.1
51334	44.6N	82.9E	321	M	110	0	0	0	3.0	7.1	7.7
51379	44.0N	89.6E	794	M	106	0	0	0	2.9	7.7	8.2
51818	37.6N	78.3E	1376	M	110	0	0	0	2.7	4.1	4.9
52866	36.6N	101.8E	2262	S	112	0	0	0	1.4	-4.1	4.3

53083	44.6N	114.2E	1183	M	111	0	0	0	2.6	6.1	6.6
53352	41.7N	110.4E	1377	M	111	0	0	0	2.9	6.1	6.8
53480	41.0N	113.1E	1416	M	105	0	0	0	2.8	5.8	6.4
53487	40.1N	113.3E	1069	M	111	0	0	28	2.4	4.4	5.0
53502	39.8N	105.8E	1143	M	111	0	0	48	2.3	4.9	5.4
53646	38.3N	109.8E	1058	MS	112	6	5	0	0.8	-13.4	13.4
53705	37.5N	105.7E	1185	M	111	0	0	37	2.3	4.0	4.6
53863	37.0N	111.9E	750	M	111	0	0	0	2.1	4.3	4.8
54386	41.4N	128.2E	1018	M	111	0	0	0	2.7	4.7	5.4
56193	32.4N	104.5E	877	M	112	0	0	0	2.5	5.7	6.2
56287	30.0N	103.0E	629	M	112	0	0	0	1.9	6.0	6.3
56385	29.5N	103.3E	3049	S	112	0	0	0	2.6	-6.1	6.6
56462	29.0N	101.5E	2994	S	112	0	0	0	1.3	8.9	9.0
56768	25.0N	101.5E	1773	S	112	0	0	0	0.9	-5.5	5.6
57014	34.6N	105.9E	1086	M	105	0	0	0	2.8	4.7	5.5
57816	26.6N	106.7E	1074	MS	112	89	79	0	0.5	-14.3	14.3
57832	27.0N	108.7E	611	M	112	0	0	0	1.4	4.7	4.9
57845	26.2N	109.8E	397	M	112	0	0	0	1.1	4.1	4.2
57922	25.8N	107.6E	971	M	112	0	0	1	2.0	5.1	5.5
57932	26.0N	108.5E	287	M	112	0	0	0	1.4	4.6	4.8
58437	30.1N	118.2E	1836	S	112	0	0	61	1.8	-5.3	5.6
59663	21.8N	112.0E	22	MS	112	0	0	0	0.9	-8.4	8.4

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
82181	2.0S	54.1W	146	MS	79	0	0	0	1.2	5.4	5.5
82586	5.2S	39.3W	212	MS	80	1	1	1	1.1	-4.0	4.1
82704	7.6S	72.7W	170	MS	67	0	0	0	1.2	-4.6	4.8
83235	12.4S	46.4W	604	MS	84	0	0	2	1.3	6.1	6.2
83332	14.1S	46.4W	826	MS	83	6	7	0	0.8	13.5	13.5
83470	17.9S	50.9W	727	MS	81	1	1	4	1.3	-5.6	5.7
83531	18.6S	46.5W	940	MS	83	0	0	0	0.6	-6.1	6.1
83836	25.5S	50.6W	837	MS	84	0	0	1	1.2	-4.2	4.4
84425	5.9S	76.1W	179	MS	20	0	0	0	1.1	5.7	5.8
84452	6.8S	79.8W	29	MS	102	0	0	0	0.8	4.4	4.5
84455	6.5S	76.4W	281	MS	74	0	0	0	1.7	7.8	8.0
84472	7.1S	78.5W	2620	S	49	0	0	0	0.6	-5.7	5.7
84474	7.2S	76.7W	350	S	20	0	0	0	1.3	9.9	10.0
84686	13.6S	72.0W	3248	S	97	0	0	0	0.7	-4.0	4.1
84688	13.7S	73.4W	3444	S	43	0	0	0	0.5	-12.1	12.1
85140	14.3S	67.4W	140	MS	51	0	0	0	1.1	7.8	7.9
85264	18.5S	64.1W	1998	S	51	51	100	0			
85312	19.8S	63.9W	992	S	43	1	2	2	1.5	-11.0	11.1
85432	22.5S	68.9W	2320	S8	77	0	0	0	0.6	4.1	4.1
85836	43.6S	71.8W	277	M	40	0	0	85	2.0	5.4	5.8

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71021	61.3N	124.5W	283	MS	110	0	0	2	1.9	4.1	4.5
71060	52.5N	116.1W	230	MS	110	110	100	0			
71094	66.6N	61.6W	393	MS	112	0	0	2	1.6	-4.7	5.0
71176	60.0N	64.2W	551	MS	31	0	0	10	2.2	-4.0	4.6
71177	57.1N	61.5W	834	S	110	0	0	38	2.0	-5.5	5.9
71179	54.7N	58.4W	683	S	112	0	0	47	2.1	-5.3	5.7
71181	47.1N	55.3W	29	MS	112	0	0	0	1.0	-6.0	6.1

71506	67.0N	136.2W	720	S	74	0	0	0	1.7	-4.7	5.0
71581	54.5N	128.6W	215	MS	109	65	60	0	5.5	-8.8	10.4
72327	36.1N	86.7W	182	MS	110	0	0	0	0.6	4.0	4.0
76055	31.0N	114.9W	440	MS	66	66	100	0			
76225	28.6N	106.1W	1435	MS	77	0	0	1	1.9	-4.4	4.8
76543	22.0N	98.8W	104	MS	75	0	0	0	1.2	9.4	9.5
76658	19.2N	103.7W	494	MS	46	1	2	0	0.5	5.3	5.3
76762	17.5N	99.5W	1265	MS	62	1	2	0	0.6	5.6	5.6
76773	17.8N	97.8W	1650	MS	26	0	0	0	0.6	5.8	5.8
76843	16.8N	93.1W	528	MS	97	0	0	0	1.0	-4.7	4.8
78588	17.2N	87.5W	-285	M	103	103	100	0			

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
91367	7.3N	168.8E	2	MS	65	0	0	0	0.9	4.8	4.9
94130	14.8S	131.9E	120	MS	112	0	0	1	1.0	5.4	5.5
96505	3.7N	115.7E	-9999	8	31	31	100	0			
97284	8.6S	120.5E	1170	S8	21	0	0	71	0.6	4.7	4.7
97378	10.7S	123.1E	1	MS	33	32	97	0	0.0	-14.8	14.8

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01360	61.9N	7.9E	711	MS	102	0	0	0	1.4	6.7	6.8
06239	54.9N	44.7E	49	MS	330	117	35	0	6.1	-4.6	7.6
06605	47.1N	7.1E	1599	S8	111	0	0	0	1.3	-4.6	4.8
06685	47.0N	9.1E	515	MS	111	0	0	2	1.3	6.8	6.9
08912	42.9N	0.8W	1434	MS	87	87	100	0			
08922	42.8N	0.2W	1660	MS	84	84	100	0			
10850	48.8N	10.7E	457	MS	334	0	0	0	0.4	-6.0	6.0
11116	47.5N	10.8E	870	MS	56	0	0	0	0.7	4.7	4.8
13269	44.3N	19.9E	176	MS	109	0	0	0	0.8	8.2	8.2
14554	44.9N	18.4E	136	S	56	3	5	0	0.6	-13.7	13.7
14650	43.8N	18.0E	970	S	56	1	2	50	0.8	4.3	4.4
16344	39.3N	16.4E	1710	S8	104	0	0	7	1.2	4.7	4.9
16450	37.6N	14.3E	940	S8	108	0	0	10	0.9	-6.0	6.1
16538	40.1N	9.3E	1022	S	40	0	0	0	0.8	9.8	9.8
17203	38.9N	40.5E	1177	S8	101	0	0	0	1.0	4.3	4.4
17521	35.2N	33.5E	285	MS	80	80	100	0			
40030	35.1N	36.8E	301	M	66	0	0	0	1.5	-4.8	5.0

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	89	0	0	0	1.5	-5.6	5.8
89257	75.4S	59.9W	40	S	591	0	0	0	1.8	-5.9	6.2
89266	72.2S	60.2W	91	S	300	297	99	0	12.5	3.4	13.0
89272	75.0S	70.8W	1395	S	151	151	100	0			
89512	70.8S	11.8E	140	MS	111	0	0	0	1.2	-4.2	4.4
89610	65.9S	113.1E	90	S	302	0	0	0	1.1	-9.0	9.1
89614	66.7S	111.5E	500	S	307	307	100	0			
89744	74.0S	43.1E	3353	S	262	0	0	0	0.6	6.5	6.5
89811	66.7S	112.8E	1366	S	308	0	0	0	0.9	-4.7	4.8

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	3426	0	45	1.7	0.0	3385	0	44	0	6.7	0.5
AAL	5561	0	38	1.6	0.0	5155	0	40	0	6.9	0.3
AAR	1031	0	5	2.0	-0.7	1019	0	6	0	7.6	-0.2
ACA	1908	1	13	1.7	-0.1	1583	0	15	0	7.3	0.4
ACI	95	0	3	1.1	0.7	95	0	3	0	5.5	1.3
AEA	1235	0	2	1.6	-0.2	1036	1	3	0	7.6	0.2
AEL	60	0	75	1.4	-0.2	52	0	8	0	12.4	0.5
AEU	28	0	4	1.4	-0.2	22	0	9	0	11.1	1.8
AFL	688	0	2	1.6	0.5	369	0	5	0	9.1	0.0
AFR	1611	1	7	1.5	0.2	1592	0	7	0	7.0	0.4
AJM	275	1	3	1.5	0.0	246	0	4	0	6.9	0.3
AJX	243	0	7	1.8	0.4	238	0	10	0	11.4	-0.1
AMD	135	0	57	1.7	0.9	135	0	57	0	5.8	0.2
AMT	1635	1	41	1.6	-0.2	1596	0	41	0	7.8	0.2
AMX	372	2	5	1.8	0.2	342	1	80	0	11.2	0.1
ANA	64	2	2	1.6	-0.7	63	2	3	0	5.6	0.3
ANZ	5283	0	22	1.2	0.2	5266	0	22	0	6.1	0.5
ARG	27	7	41	1.5	0.3	23	0	43	0	10.0	-0.3
ATN	135	2	100	4.2	-0.9	131	2	100	0	11.6	2.9
AUA	75	1	51	4.9	3.5	75	0	16	0	7.5	-0.8
AVA	287	1	3	1.7	0.4	287	0	5	0	9.2	0.5
AVN	118	0	42	0.8	0.2	117	0	43	0	6.3	0.1
AXF	55	0	33	0.9	0.1	55	0	33	0	6.6	-0.6
AZA	559	2	8	2.1	0.3	479	0	4	0	7.5	0.5
BAL	398	0	7	1.5	0.0	395	0	8	0	7.6	0.7
BAW	603	1	17	1.7	-0.7	397	0	13	0	6.6	0.0
BBR	190	2	4	1.6	0.5	191	0	100	0	14.3	1.8
BHP	48	2	8	2.0	-0.6	40	0	10	0	7.5	1.2
BPA	859	1	77	1.7	0.5	833	0	7	0	7.3	0.5
BWA	399	1	4	1.6	0.0	346	1	4	0	8.4	0.3
CAL	54	0	15	2.6	-0.5	56	0	13	0	7.4	-0.3
CCA	188	3	20	2.6	0.1	190	0	100	0	11.1	-0.3
CES	315	1	9	2.2	-0.2	318	0	6	0	7.3	0.3
CFC	59	2	7	1.2	-0.5	56	0	9	0	7.5	0.1
CFG	1231	0	4	1.4	0.3	1153	0	5	0	7.8	-0.1
CKK	139	0	9	2.2	0.4	146	1	9	0	7.7	1.0
CKS	341	0	33	1.6	-0.1	306	0	37	0	9.2	0.4
CLX	443	0	5	1.6	-0.4	295	0	8	0	6.4	0.3
CNJ	40796	0	94	1.2	0.5	40796	0	94	0	6.2	0.5
COA	193	1	24	1.7	0.1	151	0	23	0	8.4	0.2
CRL	1204	1	4	1.8	0.6	1176	0	5	0	7.3	0.6
CSN	85	1	12	1.8	0.0	83	0	11	0	8.2	0.5
CTM	31	0	3	1.0	-0.5	31	0	10	0	13.3	-3.2
CUB	222	0	3	1.5	-0.2	210	0	6	0	9.0	0.5
DAL	3113	0	34	1.6	0.1	2829	0	37	0	6.9	0.4
DHL	146	0	100	6.2	-5.5	77	0	35	0	15.1	3.0
DLH	1036	0	11	1.5	0.3	976	0	12	0	6.4	0.6
DRD	257	0	4	1.9	0.0	257	0	2	0	7.2	0.5
EDW	90	1	3	1.8	-0.8	76	1	4	0	7.4	0.6
EEZ	224	0	6	1.5	0.2	223	0	7	0	7.5	0.4
EIA	396	0	15	1.5	0.6	387	1	100	0	19.1	3.5
ELY	64	0	3	1.8	0.6	46	0	0	0	5.4	0.2
EVA	156	1	10	1.8	-0.4	165	0	7	0	5.2	-0.4
FCA	151	1	3	1.7	0.2	140	1	4	0	7.8	0.9
FDX	1769	0	47	1.5	0.2	1580	0	47	0	7.0	0.3
FIN	275	1	5	1.4	0.2	202	0	4	0	6.9	0.3
FJI	650	3	30	1.9	0.9	637	0	26	0	6.0	0.8

FOM	891	1	26	1.2	0.1	893	0	26	0	5.7	0.4
FWI	586	1	3	1.7	-0.3	590	0	2	0	7.3	0.6

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GCO	138	3	14	1.2	0.4	136	0	17	0	10.4	0.8
GES	22	0	5	2.0	0.0	20	0	5	0	12.0	-2.9
GRL	76	0	1	1.4	0.6	60	0	0	0	4.5	0.9
GTI	218	0	16	2.7	1.4	211	0	10	0	8.2	0.6
HAL	3873	0	38	1.9	0.3	3790	0	38	0	7.6	0.5
HMY	69	1	39	1.9	0.0	68	0	40	0	11.9	1.1
HXL	340	0	5	1.5	-0.1	309	0	5	0	8.6	0.4
IBE	3445	1	5	1.6	0.2	3428	0	6	0	8.5	0.4
ICE	971	0	7	1.6	0.0	660	0	4	0	7.1	0.7
IWD	286	0	1	1.5	0.0	279	1	2	0	7.6	0.5
JAL	2120	0	4	1.7	0.2	2090	0	5	0	8.0	0.2
JAZ	972	1	4	1.6	0.5	965	0	6	0	7.5	0.6
JBU	38	3	3	1.3	-0.1	39	0	5	0	10.2	-2.1
KAL	1189	1	9	2.0	-0.2	1187	0	10	0	8.3	-0.3
KLM	1191	1	8	1.6	0.0	1006	0	10	0	8.0	0.3
LAN	654	0	4	1.4	0.0	655	0	4	0	5.4	0.6
LAP	42	0	60	4.2	2.4	42	0	50	0	10.5	-1.5
LDI	379	1	5	1.9	0.3	332	0	4	0	7.4	0.4
LNE	108	2	5	1.5	0.1	107	0	7	0	11.0	0.5
LOT	278	1	3	1.8	-0.2	164	0	1	0	6.0	0.1
LTU	983	0	5	1.8	0.0	850	0	5	0	8.3	1.1
LXR	41	0	0	1.4	-0.4	39	0	3	0	10.0	-0.1
MAS	188	0	8	1.6	-0.4	172	0	9	0	5.9	0.0
MMZ	57	2	7	1.8	-0.7	57	0	7	0	11.6	0.3
MON	58	0	2	1.2	-0.2	44	0	9	0	11.6	1.2
MPD	296	1	3	1.7	0.3	290	0	2	0	7.7	0.1
MPH	784	0	2	1.6	-0.6	612	0	2	0	7.8	-0.4
MXA	44	7	30	3.6	0.5	44	0	100	0	15.8	0.1
MYT	175	0	4	1.5	-0.2	126	0	6	0	9.1	1.6
NAO	349	1	35	2.1	1.0	333	1	37	0	7.0	0.7
NCA	970	0	3	1.5	0.2	722	0	5	0	7.1	0.3
NOS	69	0	0	1.3	0.2	62	0	0	0	6.8	-0.2
NVR	67	0	4	1.4	-0.2	40	0	10	0	7.3	0.2
NWA	7371	1	17	1.8	0.0	7238	0	18	0	8.6	0.2
NZL	3244	0	10	1.0	0.1	3244	0	10	0	4.7	0.2
OAE	490	0	23	1.4	-0.2	395	0	100	0	9.7	1.5
OOM	84	0	4	1.5	-0.9	62	2	10	0	9.2	0.0
PAC	340	0	11	1.8	-0.4	327	0	11	0	8.2	0.1
PAL	1336	0	8	1.6	-0.1	1301	1	10	0	8.5	0.4
PAO	216	0	34	1.1	0.3	216	0	34	0	8.5	0.9
PBI	600	0	36	1.3	-0.2	594	0	36	0	5.3	0.0
PLM	252	0	4	2.4	1.5	216	0	5	0	9.9	0.6
PUA	32	22	63	1.0	-0.4	31	0	58	0	17.0	-1.0
QFA	3472	0	45	1.2	0.3	3469	0	45	0	5.5	0.3
QQA	48	0	38	1.0	0.0	48	0	38	0	3.8	0.7
RAM	352	3	5	1.6	0.1	255	0	100	0	10.0	0.8
RCH	429	0	100	2.9	-0.2	363	0	100	0	11.0	1.2
RRR	55	0	5	1.8	-0.4	56	0	4	0	5.6	0.6
RYN	135	0	43	1.6	-0.4	136	0	43	0	6.5	0.5
RZO	506	1	6	1.8	-0.5	478	0	8	0	8.6	0.9
SAA	49	2	4	1.6	-0.1	47	0	4	0	10.5	-0.1
SEU	228	0	5	1.7	0.4	218	0	4	0	6.1	0.8
SIA	374	0	2	1.3	0.4	373	0	2	0	4.8	-0.4
SLM	111	1	2	1.3	0.3	111	0	2	0	7.2	-0.2
SQC	41	0	0	1.3	0.4	41	0	0	0	5.6	-1.1
SSV	26	8	19	1.1	0.2	24	0	13	0	4.7	0.7
SVH	206	0	6	1.3	0.6	206	0	6	0	5.3	0.0

TAG	38	0	32	1.8	0.6	36	0	33	0	7.1	0.1
TAM	33	0	55	3.1	0.2	33	0	55	0	14.0	-2.3

	TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
TAP	519	0	2	1.6	-0.3	476	0	5	0	9.1	0.4
TCW	35	0	0	1.4	0.3	34	0	0	0	6.5	0.3
TCX	29	0	0	1.1	0.2	28	0	0	0	4.1	0.6
THA	232	0	3	1.5	0.7	233	0	3	0	4.8	0.5
THT	919	0	23	0.9	0.5	918	0	23	0	5.1	0.9
TPA	57	0	2	1.2	0.5	56	0	2	0	6.0	-0.1
TSC	64	0	2	1.6	-0.5	43	0	0	0	5.2	0.7
TSO	55	0	20	2.4	-1.1	55	0	16	0	8.3	0.4
TUB	130	1	12	2.4	0.9	109	0	8	0	8.4	-0.2
UAE	621	0	8	1.3	0.4	621	0	8	0	4.8	0.4
UAL	278415	0	98	1.5	-0.1	278498	0	98	0	5.1	0.5
UPS	1589	1	59	1.7	0.4	1551	0	60	0	7.3	0.2
USA	121	0	3	1.7	0.3	103	0	3	0	7.9	0.8
VHF	31	0	0	0.7	-0.2	31	0	3	0	7.4	0.7
VIR	219	1	6	1.7	0.1	133	0	6	0	6.3	0.0
VRG	46	4	63	2.5	0.6	44	2	100	0	16.5	3.1
VVJ	30	0	3	1.6	-0.9	30	0	3	0	8.7	0.8
VVR	48	0	33	1.9	0.4	46	0	35	0	8.6	0.5
WOA	533	1	11	1.4	0.3	480	0	16	0	8.9	0.7
XLA	145	0	5	1.8	-0.2	145	0	3	0	8.2	0.4
YSS	33	6	9	1.4	-0.2	30	0	13	0	16.6	-0.3

	TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	42910	0	15	1.2	0.6	42945	0	15	0	5.0	0.5
B-	14492	0	76	1.8	0.5	14492	0	76	0	6.0	0.7
EU	226796	0	28	1.3	0.3	226795	0	27	0	4.4	0.4
HK	3969	0	28	1.5	0.2	3969	0	28	0	5.3	0.6
JP	35748	0	57	1.8	0.7	35748	0	57	0	5.5	0.4
MK	1915	8	42	5.0	3.9	1886	0	7	0	8.0	1.9
SA	5247	0	7	1.2	0.7	5247	0	8	0	4.9	0.1
TN	82	0	27	1.9	1.0	79	0	30	0	8.5	-0.4
N	1079	1	22	2.2	0.0	933	0	25	0	7.4	0.6
US ACARS	1002825	0	68	1.5	0.3	1002817	0	67	0	5.4	0.6

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

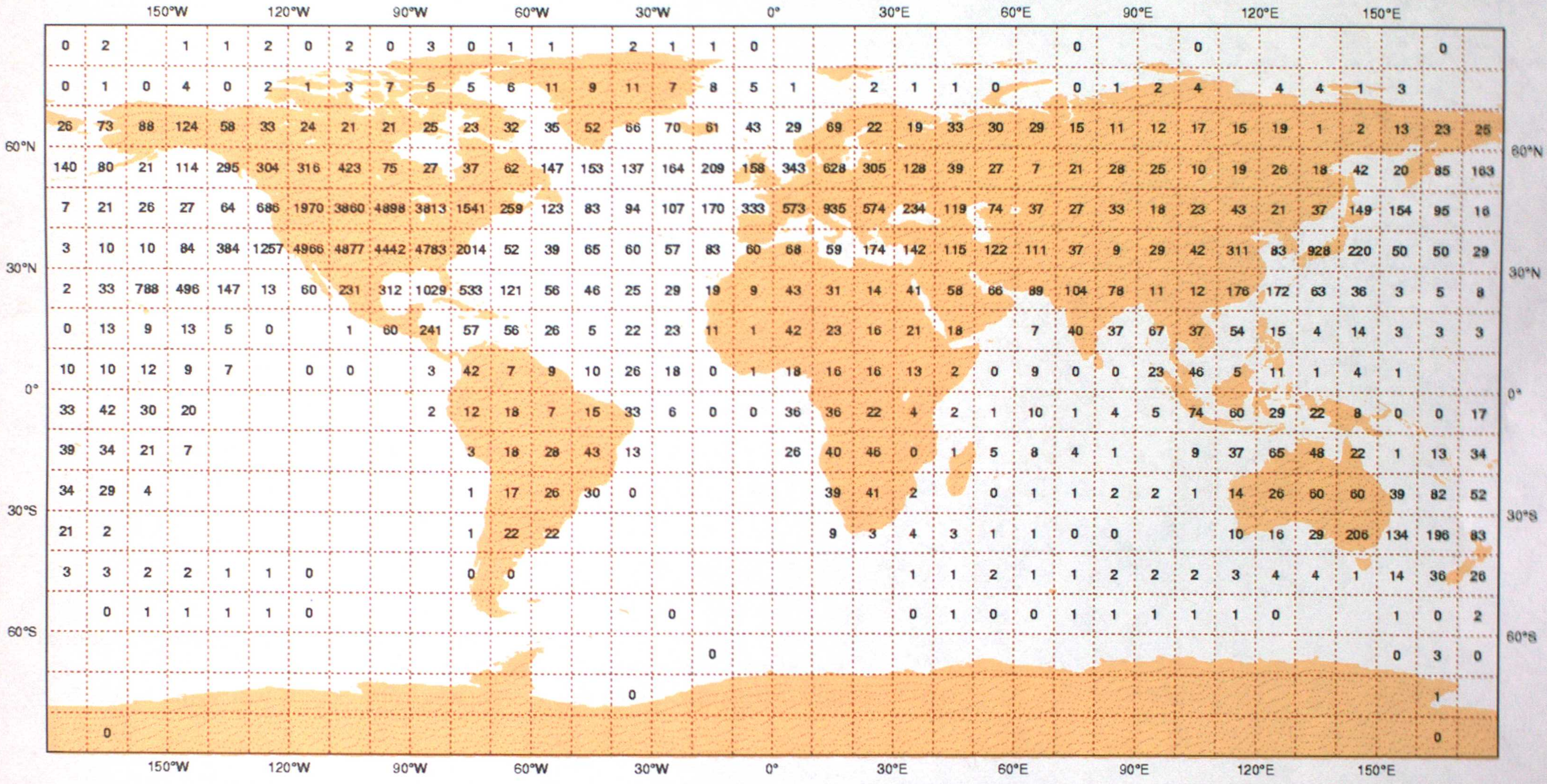
NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

IDENT.	N.REP.	TEMPERATURE PG	PR	RMS	BIAS	N.REP.	WIND PG	PR	PC	RMS	BIAS
AAL	197	0	41	1.5	-0.2	184	0	42	0	8.3	0.1
AAR	22	0	14	1.5	-0.1	22	0	18	0	6.1	0.0
ACA	35	0	6	1.0	0.3	36	0	8	0	4.2	-0.6
AFR	110	0	4	0.9	0.2	110	0	5	0	7.7	0.6
AMD	232	0	63	1.2	0.5	232	0	63	0	5.1	0.5
AMT	82	0	21	1.9	0.6	81	0	21	0	8.9	0.1
ANZ	181	1	14	1.0	0.0	185	1	14	0	5.0	0.7
AXF	63	0	52	0.8	0.1	63	0	52	0	5.0	-1.1
BAW	21	5	10	1.9	1.2	21	0	19	0	14.7	2.1
BPA	33	3	94	1.6	-0.2	32	0	0	0	6.5	-0.9
CFC	36	14	19	1.0	0.6	33	0	6	0	5.4	-0.2
CKS	38	0	13	1.5	0.0	26	0	19	0	10.8	1.5
CNJ	384189	0	96	1.7	0.7	384189	0	96	0	5.7	-0.1
CRL	55	0	4	1.3	-0.3	54	0	4	0	11.9	1.1
DAL	272	0	39	1.6	0.1	245	0	40	0	7.1	0.7
DLH	259	0	17	1.2	0.2	254	0	19	0	7.5	0.9
FDX	518	0	27	1.0	0.3	396	0	27	0	6.8	0.5
FIN	77	0	3	1.2	0.1	57	0	2	0	4.9	0.1
GCO	63	0	6	1.3	0.6	61	0	8	0	7.0	0.5
GTI	21	0	10	1.0	0.7	21	0	10	0	4.3	0.6
HAL	549	0	42	1.8	0.2	541	0	42	0	6.5	1.4
IBE	65	0	8	1.2	0.3	65	0	8	0	6.1	1.6
ICE	88	0	9	1.2	0.0	72	0	6	0	6.4	-1.5
JAL	132	0	5	1.5	0.3	132	0	9	0	10.2	-0.7
JAZ	85	0	13	2.3	0.8	85	0	15	0	10.6	-0.3
JKK	25	0	40	1.0	-0.2	25	0	40	0	3.1	0.0
KIW	21	0	33	2.2	0.6	21	0	33	0	8.4	-1.4
KLM	63	0	2	1.4	0.3	42	0	2	0	7.6	-0.9
LAN	47	2	6	1.3	0.1	47	0	4	0	3.9	0.2
MPH	100	1	2	1.1	-0.1	57	0	4	0	6.5	-0.1
NCA	100	0	3	1.6	0.3	82	1	5	0	7.7	-1.7
NWA	444	1	18	1.9	0.0	432	0	19	0	9.0	0.6
NZL	17726	0	55	1.1	0.2	17724	0	55	0	4.2	0.2
OAE	45	0	16	1.3	-0.4	26	0	100	0	15.9	2.9
OCE	23	9	26	3.6	2.4	23	0	13	0	8.3	0.5
PAC	59	2	3	2.0	-0.2	51	0	6	0	9.8	-1.0
PAL	29	0	14	0.8	-0.4	29	0	14	0	5.4	0.8
QFA	194	0	40	1.3	0.1	196	0	39	0	5.1	0.6
RCH	52	0	100	2.7	-0.4	44	0	100	0	12.6	1.1
RRR	77	5	14	2.8	1.8	77	0	5	0	8.4	0.7
SIA	51	0	2	1.0	0.3	51	0	2	0	3.9	0.6
SKI	171	4	42	3.3	-0.5	224	4	52	0	22.0	-1.1
STA	25	8	64	3.8	2.0	25	0	68	0	15.6	-1.8
SVH	15751	0	60	1.5	0.7	15751	0	60	0	4.3	0.3
THT	36	0	64	1.7	-1.0	36	0	64	0	8.4	0.4
UAE	91	0	4	1.0	0.4	92	0	4	0	3.5	0.6
UAL	234184	0	99	1.1	-0.2	233916	0	99	0	4.2	0.4
UPS	291	0	54	1.1	0.1	285	1	56	0	6.7	1.1
WOA	213	0	6	1.5	0.5	161	1	24	0	13.8	2.9

IDENT.	N.REP.	TEMPERATURE PG	PR	RMS	BIAS	N.REP.	WIND PG	PR	PC	RMS	BIAS
AU	47297	0	60	1.3	0.3	47310	0	60	0	4.3	0.2
B-	60918	0	74	1.4	0.5	60918	0	73	0	4.5	0.3
EU	594958	0	69	1.0	0.2	591012	0	68	0	3.8	0.1
HK	5021	0	78	1.4	0.7	5021	0	78	0	4.8	0.6
JP	95376	0	70	1.3	0.4	95376	0	69	0	4.8	0.5

MK	2127	1	61	3.8	2.6	2091	0	50	0	5.3	0.7
SA	4227	0	58	1.5	0.2	4227	0	59	0	4.6	0.1
US ACARS	1528076	0	78	1.1	0.3	1524223	0	79	0	4.1	0.3

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 62055



0	2		1	1	2	0	2	0	3	0	1	1		2	1	1	0								0			0						0	
0	1	0	4	0	2	1	3	7	5	5	6	11	9	11	7	8	5	1		2	1	1	0		0	1	2	4		4	4	1	3		
26	73	88	124	58	33	24	21	21	25	23	32	35	52	66	70	61	43	29	69	22	19	33	30	29	15	11	12	17	15	19	1	2	13	23	25
140	80	21	114	295	304	316	423	75	27	37	62	147	153	137	164	209	158	343	628	305	128	39	27	7	21	28	25	10	19	26	18	42	20	85	163
7	21	26	27	64	686	1970	3860	4898	3813	1541	259	123	83	94	107	170	333	573	935	574	234	119	74	37	27	33	18	23	43	21	37	149	154	95	16
3	10	10	84	384	1257	4966	4877	4442	4783	2014	52	39	65	60	57	83	60	68	59	174	142	115	122	111	37	9	29	42	311	83	928	220	50	50	29
2	33	788	496	147	13	60	231	312	1029	533	121	56	46	25	29	19	9	43	31	14	41	58	66	89	104	78	11	12	176	172	63	36	3	5	8
0	13	9	13	5	0		1	60	241	57	56	26	5	22	23	11	1	42	23	16	21	18		7	40	37	67	37	54	15	4	14	3	3	3
10	10	12	9	7		0	0		3	42	7	9	10	26	18	0	1	18	16	16	13	2	0	9	0	0	23	46	5	11	1	4	1		
33	42	30	20						2	12	18	7	15	33	6	0	0	36	36	22	4	2	1	10	1	4	5	74	60	29	22	8	0	0	17
39	34	21	7							3	18	28	43	13				26	40	46	0	1	5	8	4	1		9	37	65	48	22	1	13	34
34	29	4								1	17	26	30	0					39	41	2		0	1	1	2	2	1	14	26	60	60	39	82	52
21	2									1	22	22							9	3	4	3	1	1	0	0			10	16	29	206	134	196	83
3	3	2	2	1	1	0				0	0										1	1	2	1	1	2	2	2	3	4	4	1	14	36	26
	0	1	1	1	1	0									0						0	1	0	0	1	1	1	1	1	0			1	0	2
																0																	0	3	0
														0																				1	
	0																																	0	

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 106683

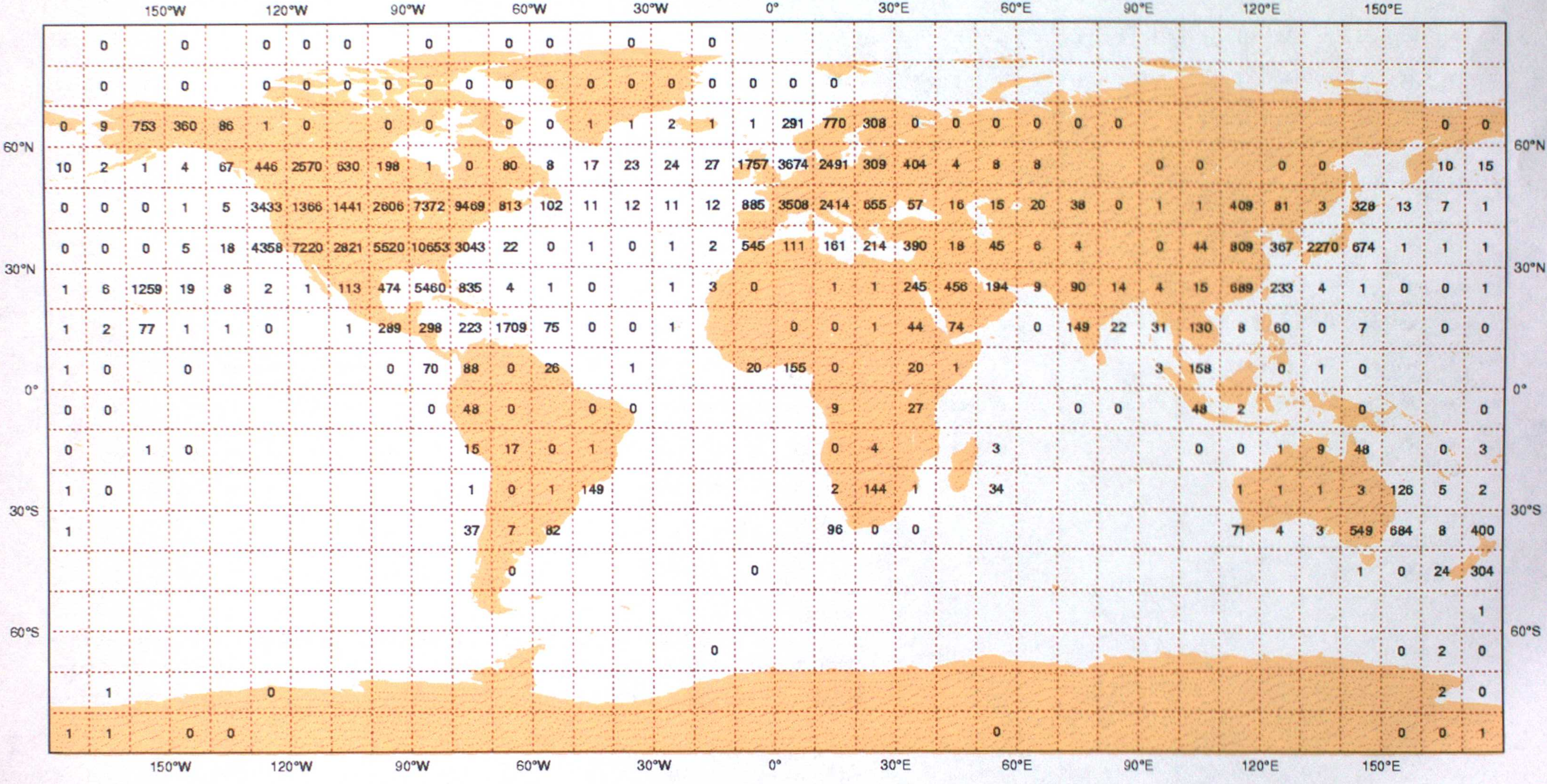

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 9 753 360 86 1 0 0 0 0 0 1 1 2 1 1 291 770 308 0 0 0 0 0 0 0 0
10 2 1 4 67 446 2570 630 198 1 0 80 8 17 23 24 27 1757 3674 2491 309 404 4 8 8 0 0 0 0 10 15
0 0 0 1 5 3433 1366 1441 2606 7372 9469 813 102 11 12 11 12 885 3508 2414 655 57 16 15 20 38 0 1 1 409 81 3 328 13 7 1
0 0 0 5 18 4358 7220 2821 5520 10653 3043 22 0 1 0 1 2 545 111 161 214 390 18 45 6 4 0 44 809 367 2270 674 1 1 1
1 6 1259 19 8 2 1 113 474 5460 835 4 1 0 1 3 0 1 1 245 456 194 9 90 14 4 15 689 233 4 1 0 0 1
1 2 77 1 1 0 1 289 298 223 1709 75 0 0 1 0 0 1 44 74 0 149 22 31 130 8 60 0 7 0 0
1 0 0 0 70 88 0 26 1 20 155 0 20 1 3 158 0 1 0
0 0 0 48 0 0 0 9 27 0 0 48 2 0 0
0 1 0 15 17 0 1 0 4 3 0 0 1 9 48 0 3
1 0 1 0 1 149 2 144 1 34 1 1 1 3 126 5 2
1 37 7 82 96 0 0 71 4 3 549 684 8 400
0 0 1 0 24 304
1
0 0 2 0
1 0 2 0
1 1 0 0 0 0 0 1

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

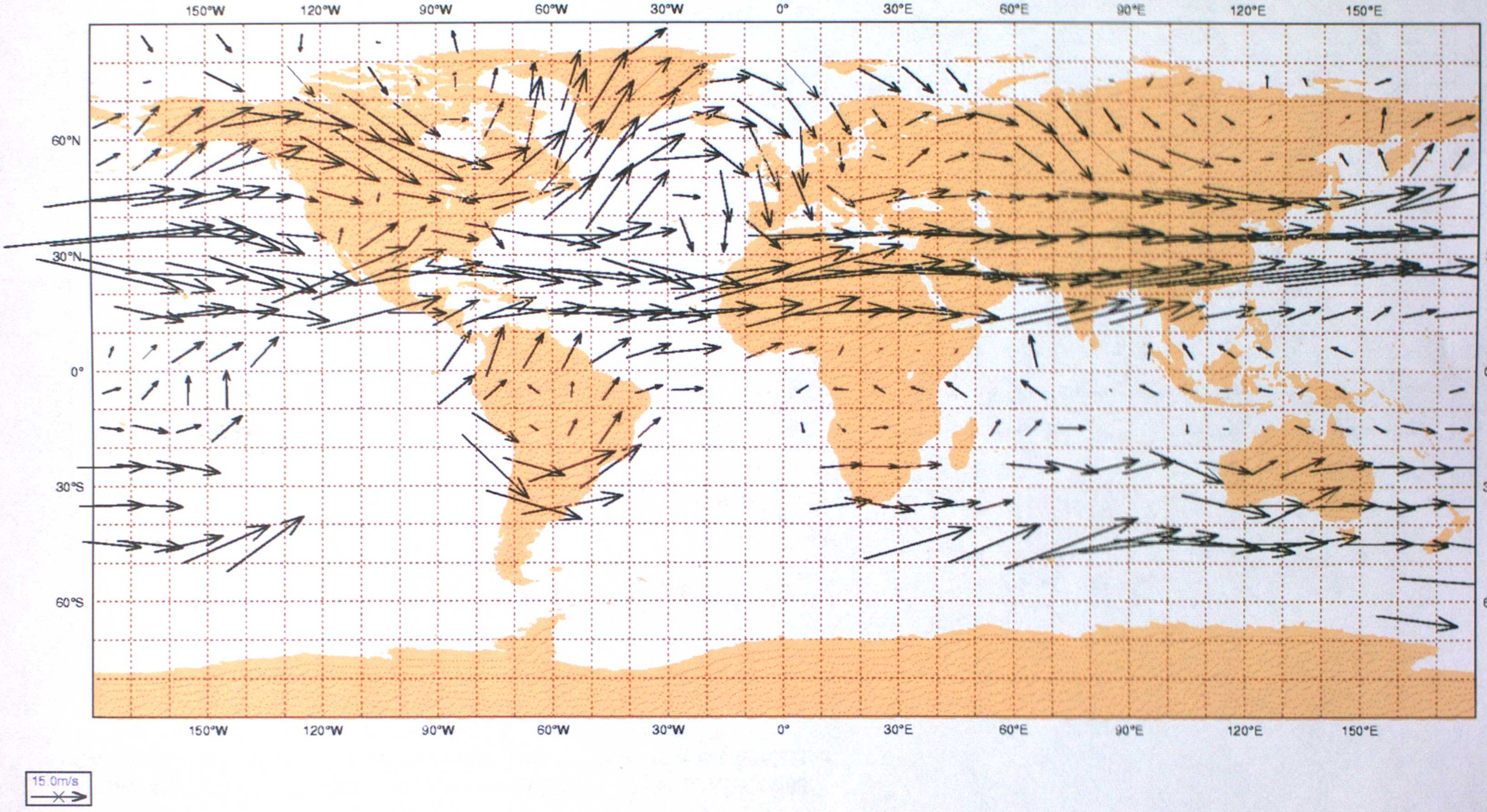

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

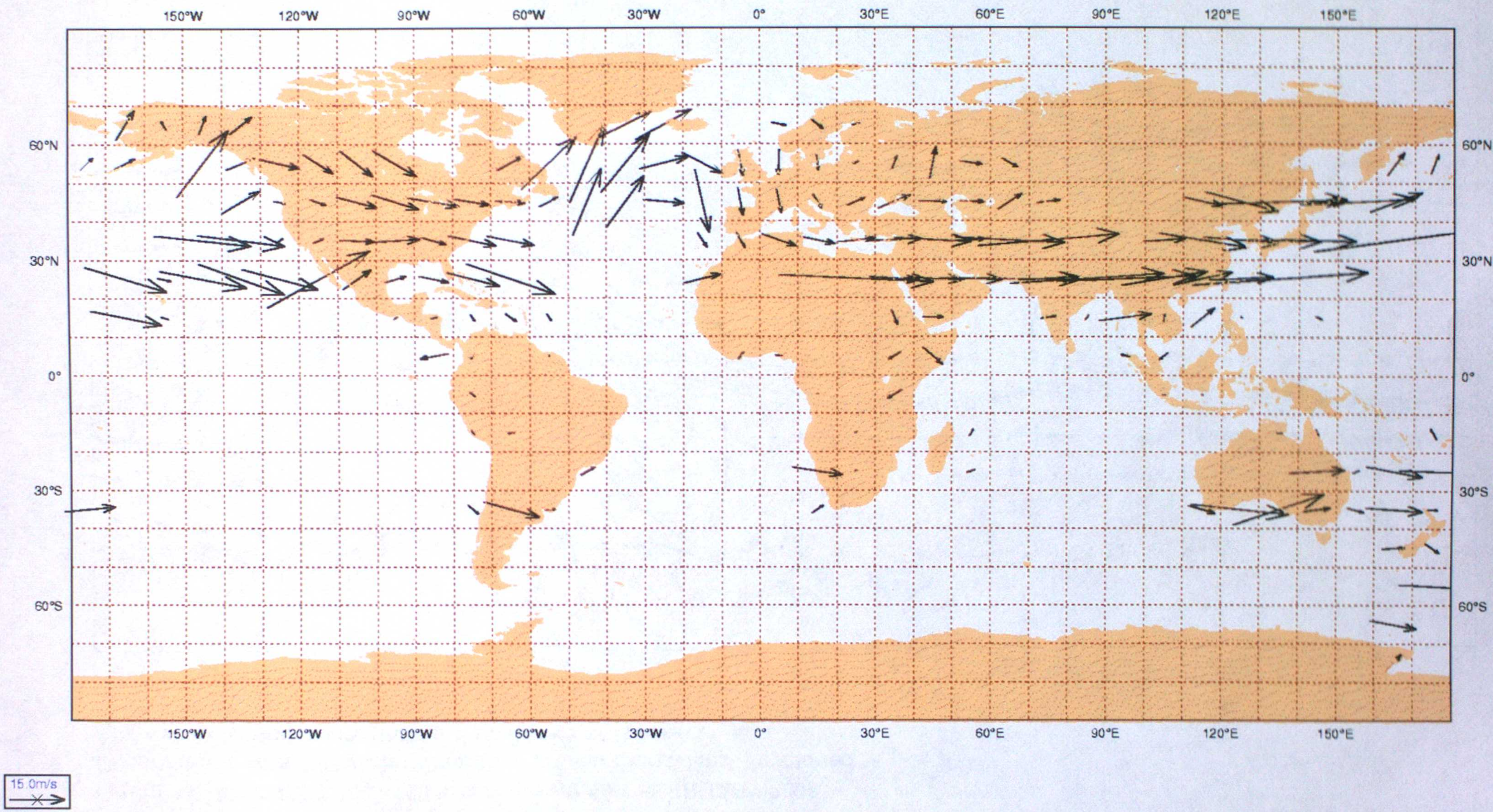

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

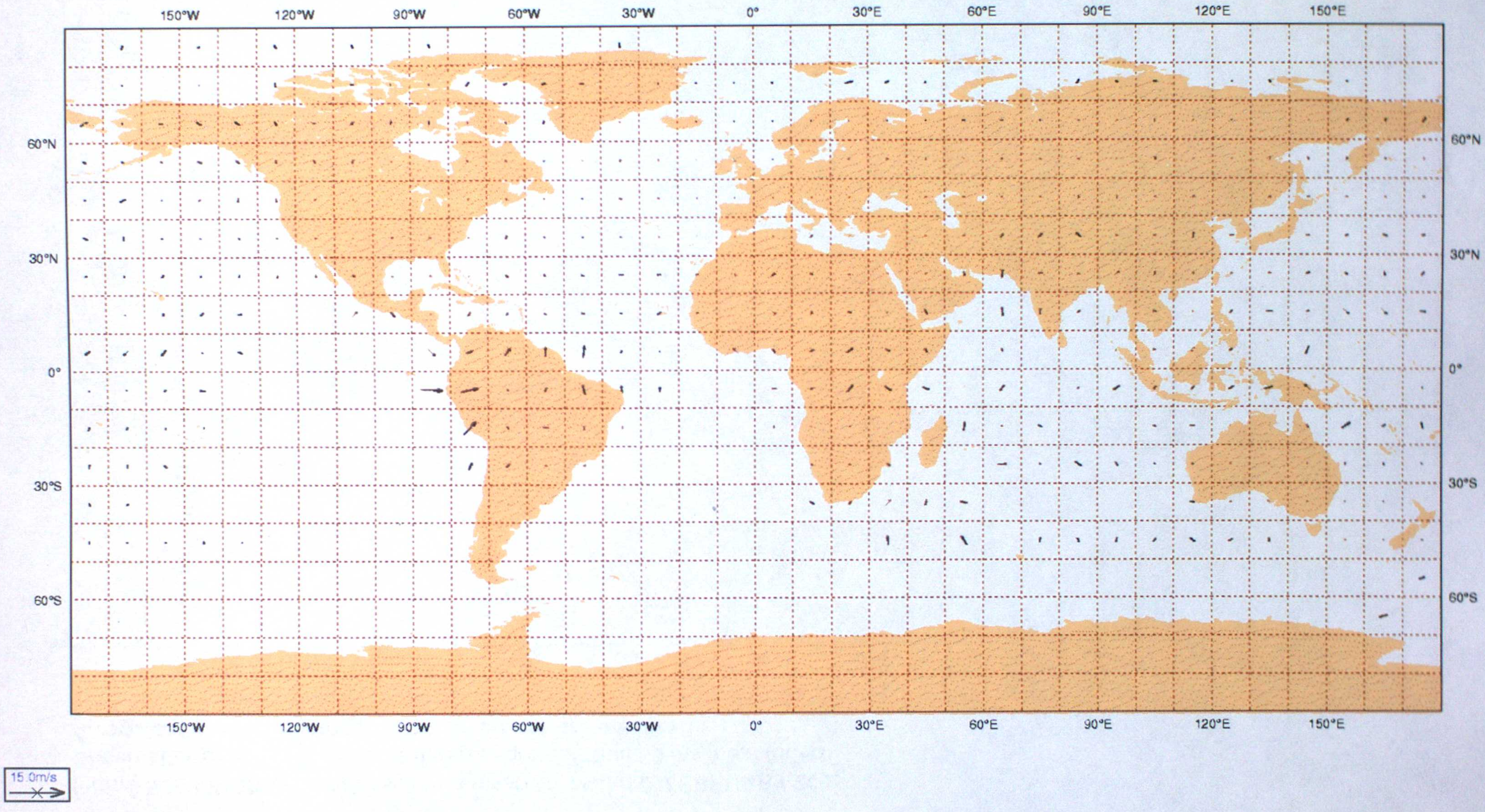

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

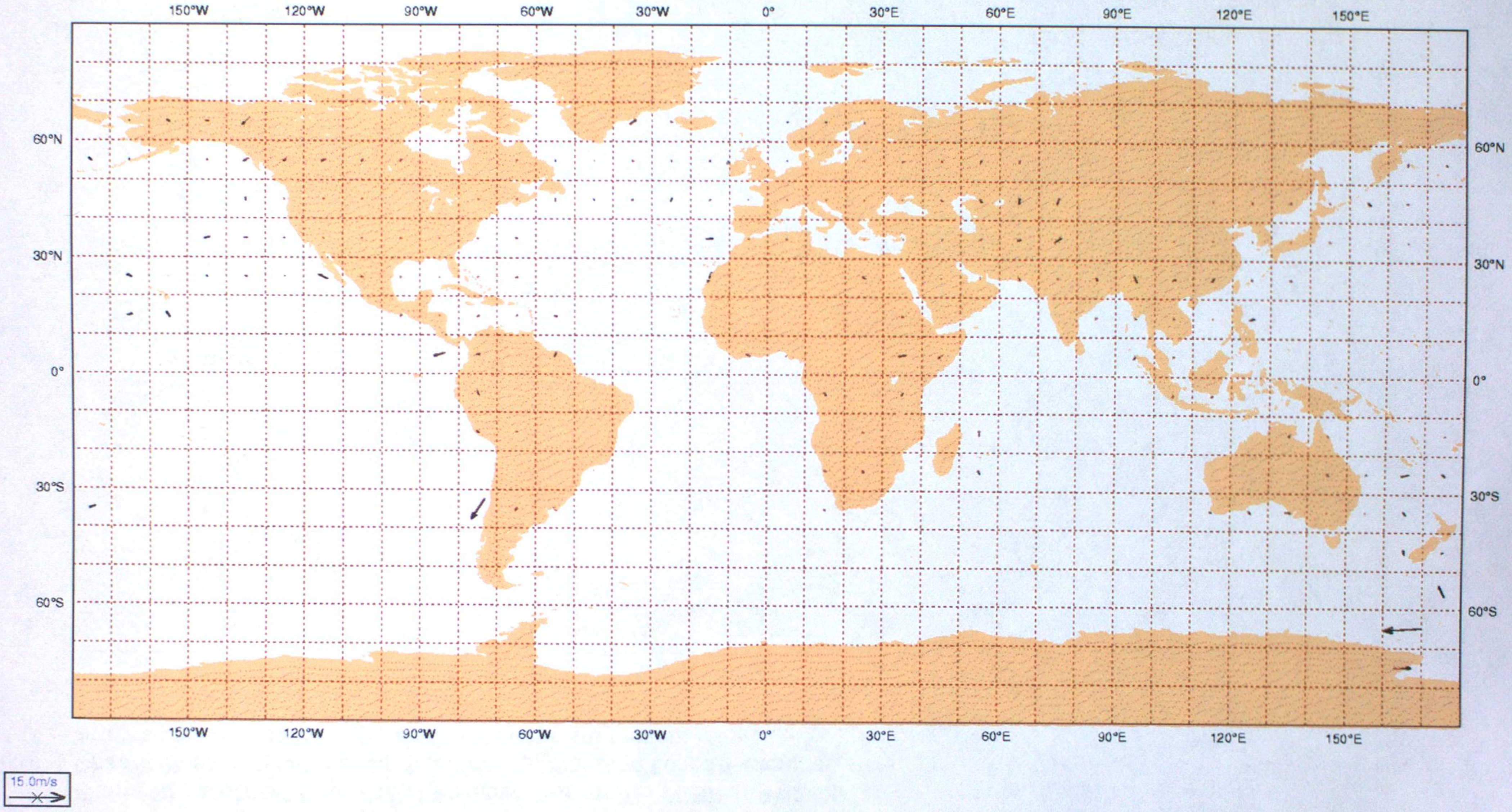

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

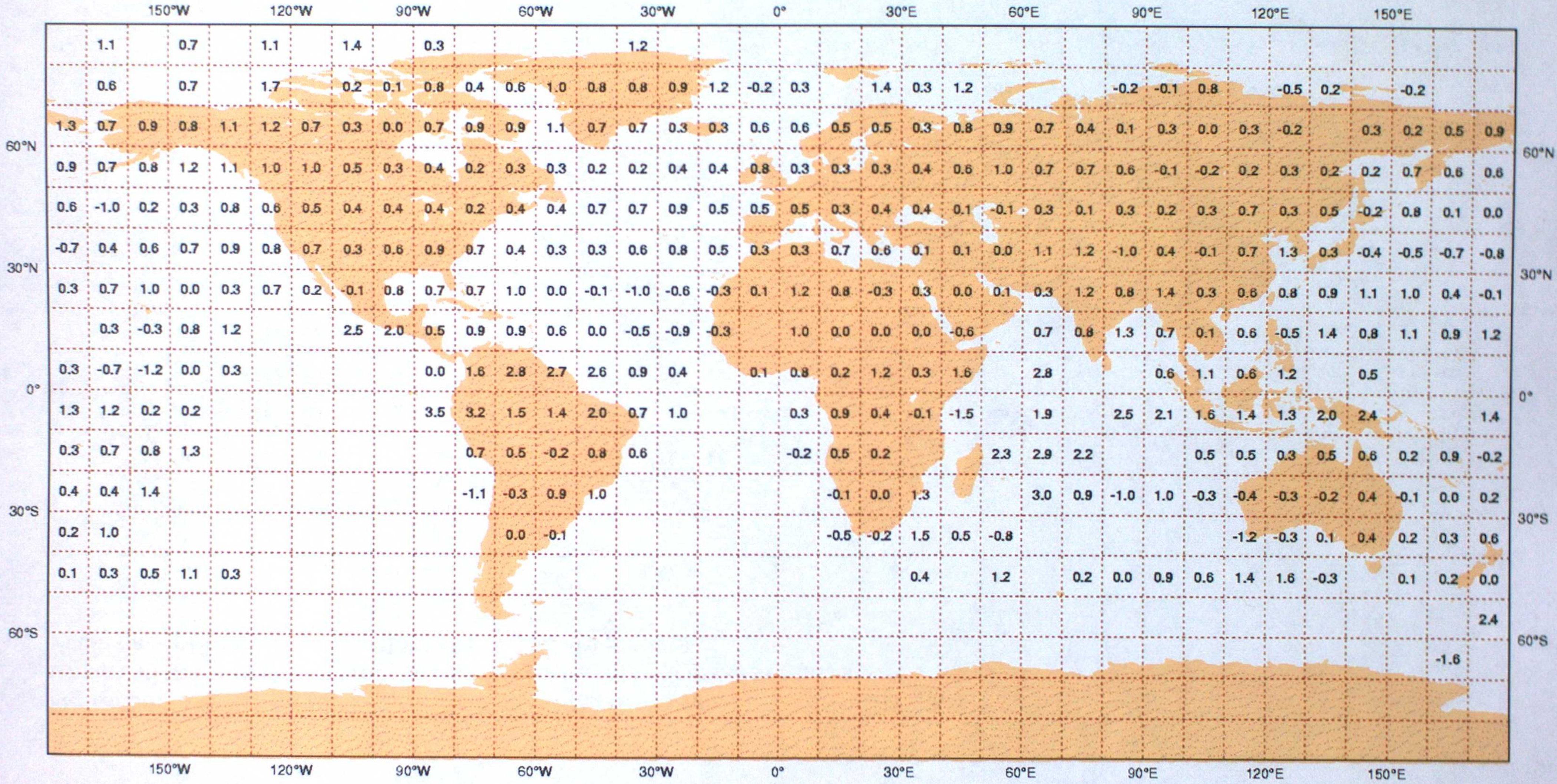

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
1.1 0.7 1.1 1.4 0.3 1.2
0.6 0.7 1.7 0.2 0.1 0.8 0.4 0.6 1.0 0.8 0.8 0.9 1.2 -0.2 0.3 1.4 0.3 1.2 -0.2 -0.1 0.8 -0.5 0.2 -0.2
1.3 0.7 0.9 0.8 1.1 1.2 0.7 0.3 0.0 0.7 0.9 0.9 1.1 0.7 0.7 0.3 0.3 0.6 0.6 0.5 0.5 0.3 0.8 0.9 0.7 0.4 0.1 0.3 0.0 0.3 -0.2 0.3 0.2 0.5 0.9
0.9 0.7 0.8 1.2 1.1 1.0 1.0 0.5 0.3 0.4 0.2 0.3 0.3 0.2 0.2 0.4 0.4 0.8 0.3 0.3 0.3 0.4 0.6 1.0 0.7 0.7 0.6 -0.1 -0.2 0.2 0.3 0.2 0.2 0.7 0.6 0.6
0.6 -1.0 0.2 0.3 0.8 0.6 0.5 0.4 0.4 0.4 0.2 0.4 0.4 0.7 0.7 0.9 0.5 0.5 0.5 0.3 0.4 0.4 0.1 -0.1 0.3 0.1 0.3 0.2 0.3 0.7 0.3 0.5 -0.2 0.8 0.1 0.0
-0.7 0.4 0.6 0.7 0.9 0.8 0.7 0.3 0.6 0.9 0.7 0.4 0.3 0.3 0.6 0.8 0.5 0.3 0.3 0.7 0.6 0.1 0.1 0.0 1.1 1.2 -1.0 0.4 -0.1 0.7 1.3 0.3 -0.4 -0.5 -0.7 -0.8
0.3 0.7 1.0 0.0 0.3 0.7 0.2 -0.1 0.8 0.7 0.7 1.0 0.0 -0.1 -1.0 -0.6 -0.3 0.1 1.2 0.8 -0.3 0.3 0.0 0.1 0.3 1.2 0.8 1.4 0.3 0.6 0.8 0.9 1.1 1.0 0.4 -0.1
0.3 -0.3 0.8 1.2 2.5 2.0 0.5 0.9 0.9 0.6 0.0 -0.5 -0.9 -0.3 1.0 0.0 0.0 0.0 -0.6 0.7 0.8 1.3 0.7 0.1 0.6 -0.5 1.4 0.8 1.1 0.9 1.2
0.3 -0.7 -1.2 0.0 0.3 0.0 1.6 2.8 2.7 2.6 0.9 0.4 0.1 0.8 0.2 1.2 0.3 1.6 2.8 0.6 1.1 0.6 1.2 0.5
1.3 1.2 0.2 0.2 3.5 3.2 1.5 1.4 2.0 0.7 1.0 0.3 0.9 0.4 -0.1 -1.5 1.9 2.5 2.1 1.6 1.4 1.3 2.0 2.4 1.4
0.3 0.7 0.8 1.3 0.7 0.5 -0.2 0.8 0.6 -0.2 0.5 0.2 2.3 2.9 2.2 0.5 0.5 0.3 0.5 0.6 0.2 0.9 -0.2
0.4 0.4 1.4 -1.1 -0.3 0.9 1.0 -0.1 0.0 1.3 3.0 0.9 -1.0 1.0 -0.3 -0.4 -0.3 -0.2 0.4 -0.1 0.0 0.2
0.2 1.0 0.0 -0.1 -0.5 -0.2 1.5 0.5 -0.8 -1.2 -0.3 0.1 0.4 0.2 0.3 0.6
0.1 0.3 0.5 1.1 0.3 0.4 1.2 0.2 0.0 0.9 0.6 1.4 1.6 -0.3 0.1 0.2 0.0
2.4
-1.6

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

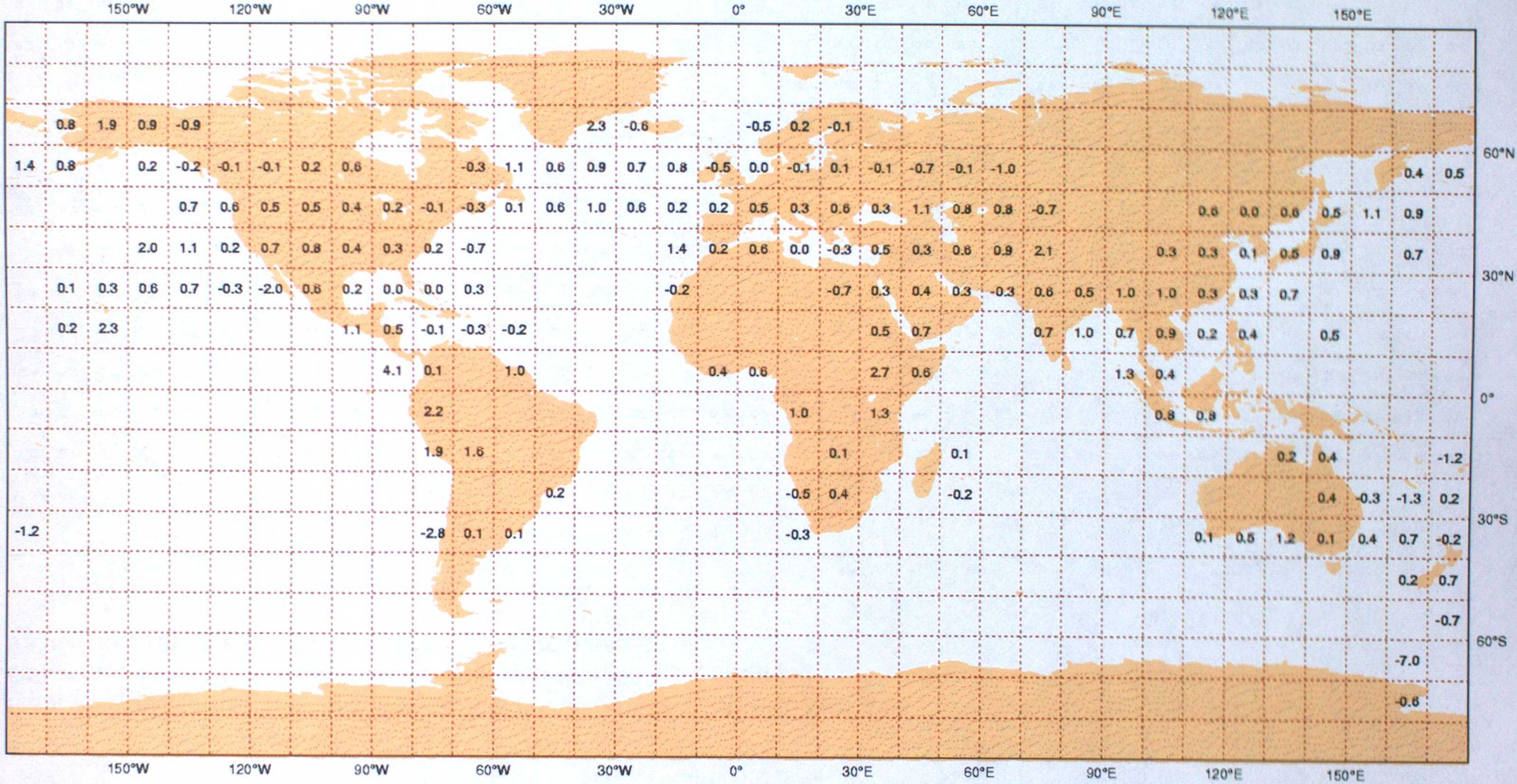

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0.8 1.9 0.9 -0.9 2.3 -0.6 -0.5 0.2 -0.1
1.4 0.8 0.2 -0.2 -0.1 -0.1 0.2 0.6 -0.3 1.1 0.6 0.9 0.7 0.8 -0.5 0.0 -0.1 0.1 -0.1 -0.7 -0.1 -1.0 0.4 0.5
0.7 0.6 0.5 0.5 0.4 0.2 -0.1 -0.3 0.1 0.6 1.0 0.6 0.2 0.2 0.5 0.3 0.6 0.3 1.1 0.8 0.8 -0.7 0.6 0.0 0.6 0.5 1.1 0.9
2.0 1.1 0.2 0.7 0.8 0.4 0.3 0.2 -0.7 1.4 0.2 0.6 0.0 -0.3 0.5 0.3 0.6 0.9 2.1 0.3 0.3 0.1 0.5 0.9 0.7
0.1 0.3 0.6 0.7 -0.3 -2.0 0.6 0.2 0.0 0.0 0.3 -0.2 -0.7 0.3 0.4 0.3 -0.3 0.6 0.5 1.0 1.0 0.3 0.3 0.7
0.2 2.3 1.1 0.5 -0.1 -0.3 -0.2 0.5 0.7 0.7 1.0 0.7 0.9 0.2 0.4 0.5
4.1 0.1 1.0 0.4 0.6 2.7 0.6 1.3 0.4
2.2 1.0 1.3 0.8 0.8
1.9 1.6 0.1 0.1 0.2 0.4 -1.2
0.2 -0.5 0.4 -0.2 0.4 -0.3 -1.3 0.2
-1.2 -2.8 0.1 0.1 -0.3 0.1 0.5 1.2 0.1 0.4 0.7 -0.2
0.2 0.7
-0.7
-7.0
-0.6

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

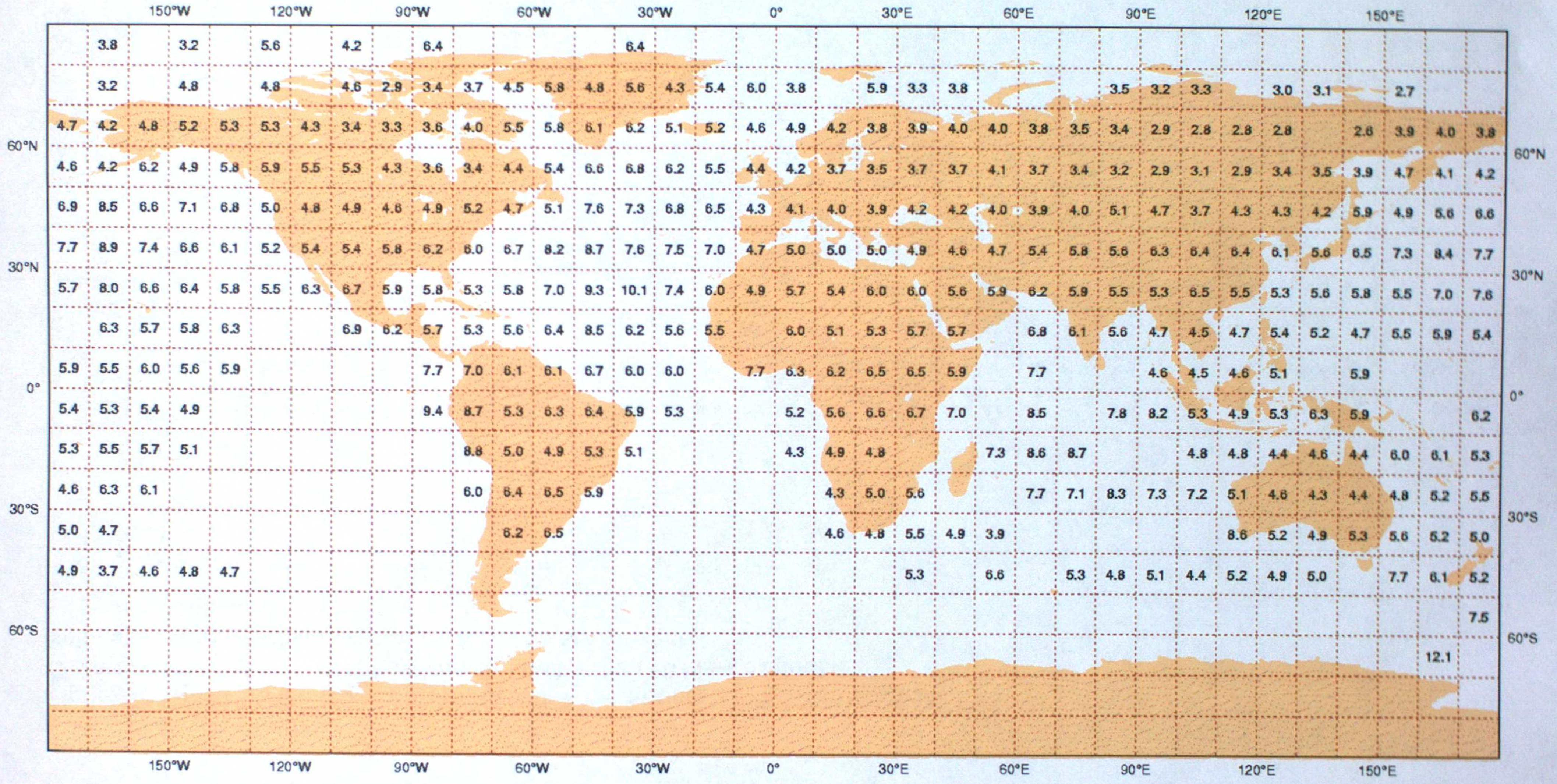

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
3.8 3.2 5.6 4.2 6.4 6.4
3.2 4.8 4.8 4.6 2.9 3.4 3.7 4.5 5.8 4.8 5.6 4.3 5.4 6.0 3.8 5.9 3.3 3.8 3.5 3.2 3.3 3.0 3.1 2.7
4.7 4.2 4.8 5.2 5.3 5.3 4.3 3.4 3.3 3.6 4.0 5.5 5.8 6.1 6.2 5.1 5.2 4.6 4.9 4.2 3.8 3.9 4.0 4.0 3.8 3.5 3.4 2.9 2.8 2.8 2.8 2.6 3.9 4.0 3.8
4.6 4.2 6.2 4.9 5.8 5.9 5.5 5.3 4.3 3.6 3.4 4.4 5.4 6.6 6.8 6.2 5.5 4.4 4.2 3.7 3.5 3.7 3.7 4.1 3.7 3.4 3.2 2.9 3.1 2.9 3.4 3.5 3.9 4.7 4.1 4.2
6.9 8.5 6.6 7.1 6.8 5.0 4.8 4.9 4.6 4.9 5.2 4.7 5.1 7.6 7.3 6.8 6.5 4.3 4.1 4.0 3.9 4.2 4.2 4.0 3.9 4.0 5.1 4.7 3.7 4.3 4.3 4.2 5.9 4.9 5.6 6.6
7.7 8.9 7.4 6.6 6.1 5.2 5.4 5.4 5.8 6.2 6.0 6.7 8.2 8.7 7.6 7.5 7.0 4.7 5.0 5.0 5.0 4.9 4.6 4.7 5.4 5.8 5.6 6.3 6.4 6.4 6.1 5.6 6.5 7.3 8.4 7.7
5.7 8.0 6.6 6.4 5.8 5.5 6.3 6.7 5.9 5.8 5.3 5.8 7.0 9.3 10.1 7.4 6.0 4.9 5.7 5.4 6.0 6.0 5.6 5.9 6.2 5.9 5.5 5.3 6.5 5.5 5.3 5.6 5.8 5.5 7.0 7.6
6.3 5.7 5.8 6.3 6.9 6.2 5.7 5.3 5.6 6.4 8.5 6.2 5.6 5.5 6.0 5.1 5.3 5.7 5.7 6.8 6.1 5.6 4.7 4.5 4.7 5.4 5.2 4.7 5.5 5.9 5.4
5.9 5.5 6.0 5.6 5.9 7.7 7.0 6.1 6.1 6.7 6.0 6.0 7.7 6.3 6.2 6.5 6.5 5.9 7.7 4.6 4.5 4.6 5.1 5.9
5.4 5.3 5.4 4.9 9.4 8.7 5.3 6.3 6.4 5.9 5.3 5.2 5.6 6.6 6.7 7.0 8.5 7.8 8.2 5.3 4.9 5.3 6.3 5.9 6.2
5.3 5.5 5.7 5.1 8.8 5.0 4.9 5.3 5.1 4.3 4.9 4.8 7.3 8.6 8.7 4.8 4.8 4.4 4.6 4.4 6.0 6.1 5.3
4.6 6.3 6.1 6.0 6.4 6.5 5.9 4.3 5.0 5.6 7.7 7.1 8.3 7.3 7.2 5.1 4.6 4.3 4.4 4.8 5.2 5.5
5.0 4.7 6.2 6.5 4.6 4.8 5.5 4.9 3.9 8.6 5.2 4.9 5.3 5.6 5.2 5.0
4.9 3.7 4.6 4.8 4.7 5.3 6.6 5.3 4.8 5.1 4.4 5.2 4.9 5.0 7.7 6.1 5.2
7.5
12.1

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). FEBRUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

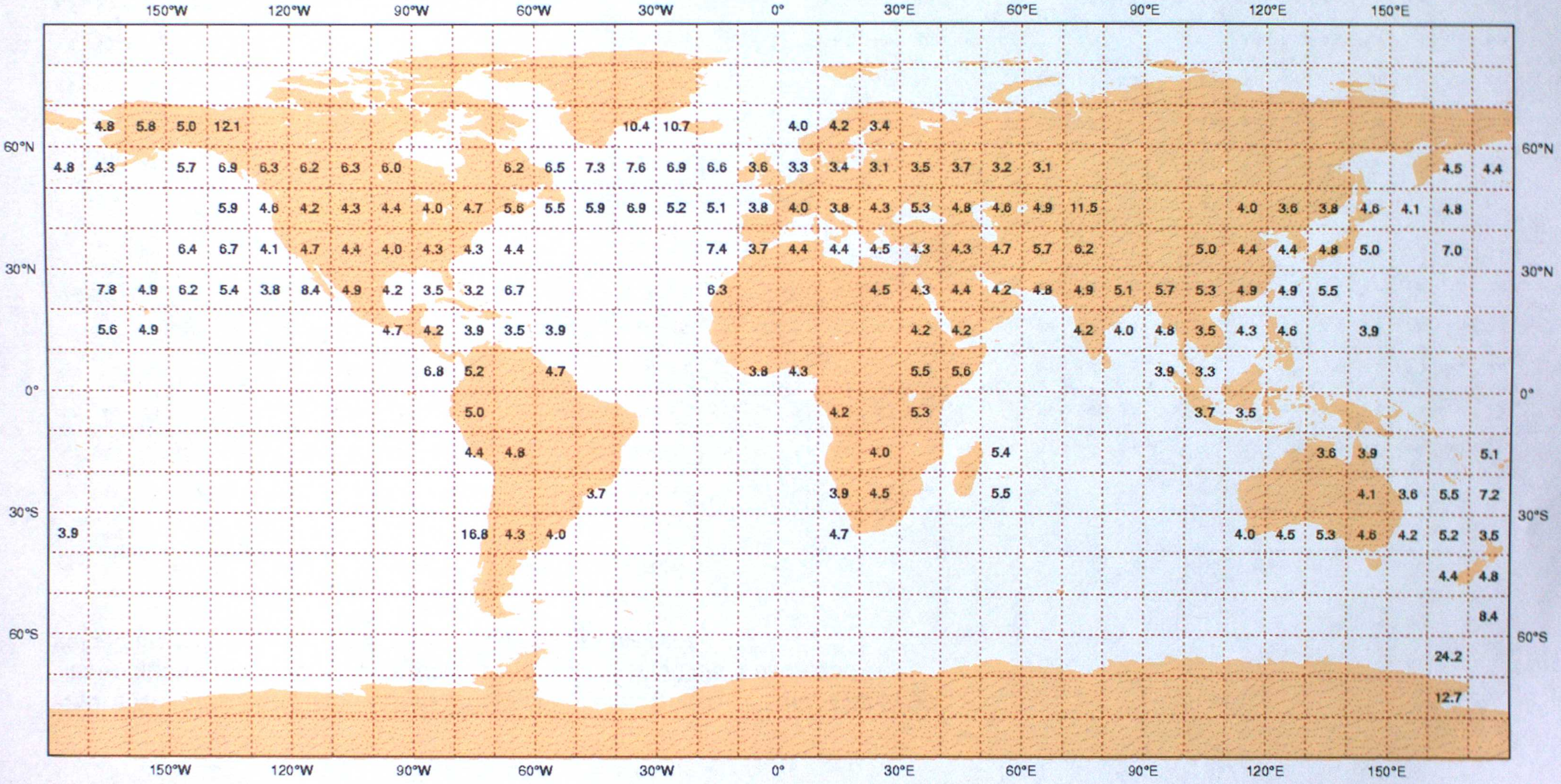

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
4.8 5.8 5.0 12.1 10.4 10.7 4.0 4.2 3.4
4.8 4.3 5.7 6.9 6.3 6.2 6.3 6.0 6.2 6.5 7.3 7.6 6.9 6.6 3.6 3.3 3.4 3.1 3.5 3.7 3.2 3.1 4.5 4.4
5.9 4.6 4.2 4.3 4.4 4.0 4.7 5.6 5.5 5.9 6.9 5.2 5.1 3.8 4.0 3.8 4.3 5.3 4.8 4.6 4.9 11.5 4.0 3.6 3.8 4.6 4.1 4.8
6.4 6.7 4.1 4.7 4.4 4.0 4.3 4.3 4.4 7.4 3.7 4.4 4.4 4.5 4.3 4.3 4.7 5.7 6.2 5.0 4.4 4.4 4.8 5.0 7.0
7.8 4.9 6.2 5.4 3.8 8.4 4.9 4.2 3.5 3.2 6.7 6.3 4.5 4.3 4.4 4.2 4.8 4.9 5.1 5.7 5.3 4.9 4.9 5.5
5.6 4.9 4.7 4.2 3.9 3.5 3.9 4.2 4.2 4.2 4.0 4.8 3.5 4.3 4.6 3.9
6.8 5.2 4.7 3.8 4.3 5.5 5.6 3.9 3.3
5.0 4.2 5.3 3.7 3.5
4.4 4.8 4.0 5.4 3.6 3.9 5.1
3.7 3.9 4.5 5.5 4.1 3.6 5.5 7.2
3.9 16.8 4.3 4.0 4.7 4.0 4.5 5.3 4.6 4.2 5.2 3.5
4.4 4.8
8.4
24.2
12.7

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
24125	00	Z	1000	68/ 112	21	6	22.1	-45.0	50.1	4
24125	12	Z	1000	68/ 112	23	5	24.7	-46.9	53.0	6
24343	00	Z	500	67/ 123	25	0	11.9	-45.8	47.3	4
25400	12	Z	70	66/ 151	25	0	49.3	-134.4	143.1	7
26477	12	Z	1000	56/ 31	24	3	33.3	-20.4	39.1	4
34247	12	Z	50	50/ 41	27	0	41.7	135.6	141.8	4
36870	00	Z	850	43/ 77	17	10	25.0	-70.5	74.8	10
42101	00	Z	1000	30/ 76	1	25	0.0	-99.0	99.0	7
42101	12	Z	150	30/ 76	16	0	97.2	2.4	97.2	4
42182	00	Z	1000	29/ 77	15	11	11.1	-81.5	82.3	6
42182	12	Z	1000	29/ 77	10	17	6.7	-82.7	83.0	9
42314	12	Z	200	27/ 95	10	0	48.1	-128.8	137.5	4
42339	00	Z	1000	26/ 73	3	21	0.9	-97.7	97.7	10
42339	12	Z	1000	26/ 73	1	25	0.0	-94.0	94.0	4
42361	00	Z	1000	26/ 78	10	10	13.5	-78.7	79.8	6
42369	00	Z	150	27/ 81	16	3	51.6	-176.2	183.6	10
42369	12	Z	200	27/ 81	12	4	105.2	-71.8	127.4	9
42379	00	Z	200	27/ 83	13	0	90.4	-66.2	112.1	5
42410	12	Z	1000	26/ 92	4	24	5.8	-93.0	93.2	7
42647	12	Z	250	23/ 73	13	0	60.9	67.2	90.7	4
42701	12	Z	100	23/ 85	14	1	111.6	-83.0	139.1	5
42809	00	Z	200	23/ 88	20	0	43.4	-123.6	131.0	10
42809	12	Z	200	23/ 88	25	1	48.2	-108.3	118.6	9
42867	00	Z	200	21/ 79	21	0	49.4	-99.9	111.4	6
42867	12	Z	250	21/ 79	22	0	51.7	-67.6	85.1	5
42874	12	Z	200	21/ 82	12	1	79.2	-59.8	99.3	4
43003	00	Z	100	19/ 73	13	4	98.7	-186.9	211.4	11
43041	00	Z	250	19/ 82	18	1	71.0	-26.9	76.0	4
43128	00	Z	100	17/ 78	18	0	81.7	-140.4	162.5	4
43128	12	Z	50	17/ 78	11	1	124.4	167.4	208.5	11
43150	00	Z	1000	18/ 83	24	3	16.1	-66.2	68.1	5
43185	00	Z	150	16/ 81	25	0	100.4	-100.7	142.2	5
43192	00	Z	1000	15/ 74	19	8	8.9	-89.9	90.4	9
43192	12	Z	1000	15/ 74	10	18	4.5	-93.8	93.9	4
43279	00	Z	200	13/ 80	10	1	54.6	-92.2	107.1	6
43285	00	Z	1000	13/ 75	3	21	5.9	-85.7	85.9	5
43311	00	Z	200	11/ 73	24	1	95.7	-102.3	140.1	7
43333	00	Z	50	12/ 93	15	0	81.7	131.1	154.4	4
43333	12	Z	100	12/ 93	17	1	91.6	-120.1	151.0	5
43346	00	Z	100	11/ 80	22	1	64.8	-146.7	160.4	4
43346	12	Z	30	11/ 80	11	1	100.1	168.9	196.4	4
43353	00	Z	1000	10/ 76	26	0	9.1	-65.3	65.9	5
43369	00	Z	200	8/ 73	16	0	65.2	-63.9	91.3	6
43369	12	Z	150	8/ 73	17	1	126.9	53.6	137.8	5
43371	00	Z	100	8/ 77	18	4	70.4	-167.2	181.4	10
43371	12	Z	100	8/ 77	13	0	113.4	-19.7	115.1	4
61902	12	Z	1000	-8/ -14	18	0	26.8	57.6	63.5	8
62010	00	Z	1000	33/ 13	14	0	44.8	-10.6	46.0	8
78866	12	Z	70	18/ -63	13	1	92.5	111.2	144.7	4
97072	00	Z	70	-1/ 120	12	0	134.2	119.2	179.5	4
97560	00	Z	300	-1/ 136	10	0	79.6	-55.7	97.2	7

Figure 8. TEMP 500 hPa geopotential mean daily count. FEBRUARY 2005
All hours
Global average number of observations in 24 hours = 1245

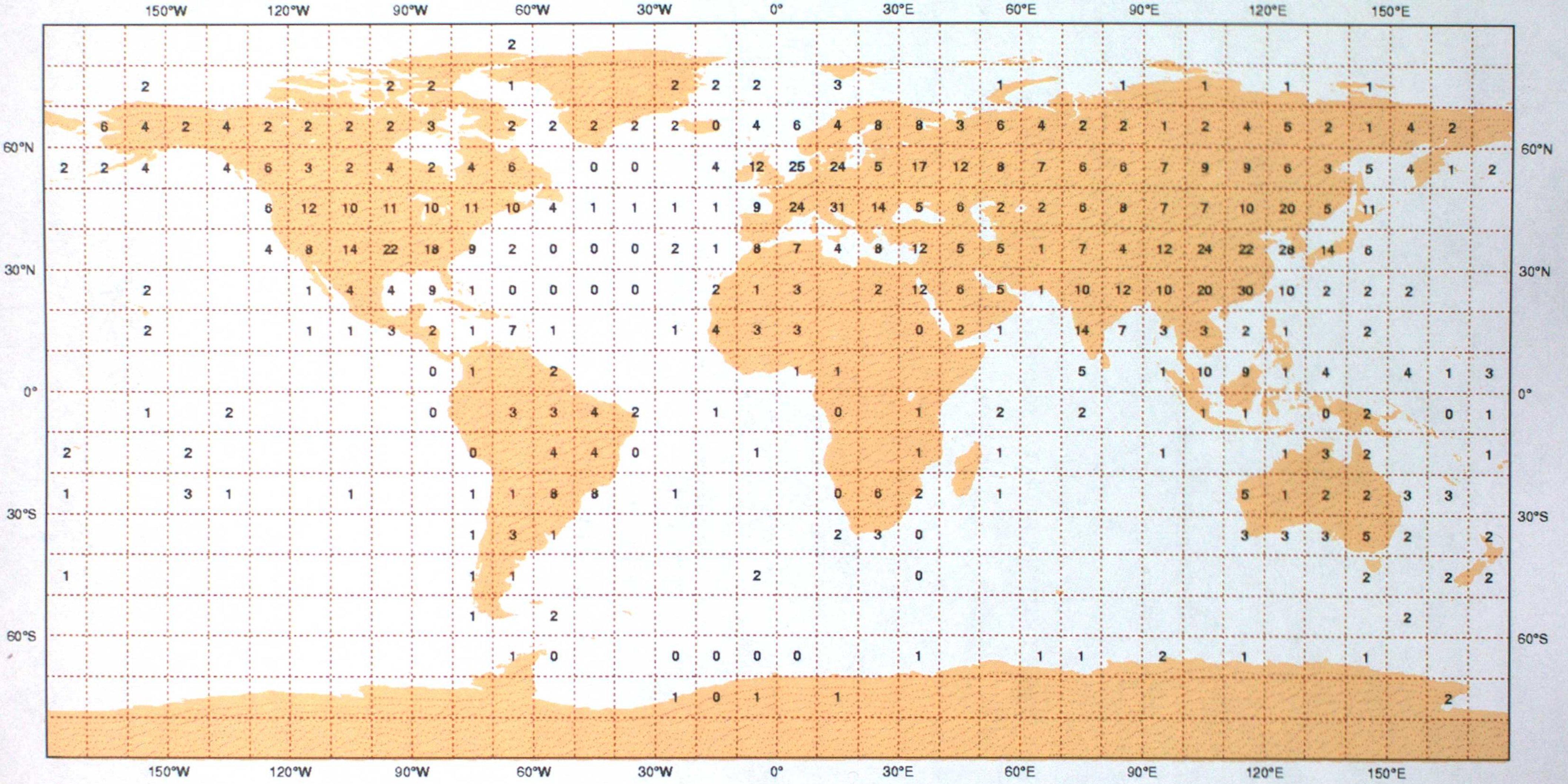

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2
2 2 2 1 2 2 2 3 1 1 1 1 1
6 4 2 4 2 2 2 2 3 2 2 2 2 2 0 4 6 4 8 8 3 6 4 2 2 1 2 4 5 2 1 4 2
2 2 4 4 6 3 2 4 2 4 6 0 0 4 12 25 24 5 17 12 8 7 6 6 7 9 9 6 3 5 4 1 2
6 12 10 11 10 11 10 4 1 1 1 1 9 24 31 14 5 6 2 2 6 8 7 7 10 20 5 11
4 8 14 22 18 9 2 0 0 0 2 1 8 7 4 8 12 5 5 1 7 4 12 24 22 28 14 6
2 1 4 4 9 1 0 0 0 0 2 1 3 2 12 6 5 1 10 12 10 20 30 10 2 2 2
2 1 1 3 2 1 7 1 1 4 3 3 0 2 1 14 7 3 3 2 1 2
0 1 2 1 1 5 1 10 9 1 4 4 1 3
1 2 0 3 3 4 2 1 0 1 2 2 1 1 0 2 0 1
2 2 0 4 4 0 1 1 1 1 1 3 2 1
1 3 1 1 1 1 8 8 1 0 6 2 1 5 1 2 2 3 3
1 3 1 2 3 0 3 3 3 5 2 2
1 1 1 2 0 2 2 2
1 2 2
1 0 0 0 0 0 1 1 1 2 1 1
1 0 1 1 2

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
07110	00	V	250	48/ -4	26	0	11	-2.1	0.7	19.4	2
16754	12	V	150	35/ 25	21	0	4	-4.1	0.1	23.4	1
26477	12	V	300	56/ 31	23	0	43	-7.5	4.3	19.6	4
41859	00	V	700	26/ 89	14	0	100	-16.1	-0.6	20.3	1
41883	12	V	500	25/ 89	11	0	100	-13.6	1.9	17.4	1
41891	00	V	700	25/ 92	18	0	77	-16.9	1.6	18.4	1
41891	12	V	700	25/ 92	19	0	68	-13.2	-0.2	15.8	1
41907	00	V	700	24/ 89	21	0	100	-15.2	0.9	17.4	1
41943	00	V	700	23/ 91	25	0	100	-14.0	1.4	15.6	1
41943	12	V	700	23/ 91	23	0	100	-13.2	1.3	15.2	1
41950	00	V	700	23/ 90	17	0	94	-11.9	2.5	15.6	1
41950	12	V	500	23/ 90	12	0	100	-17.4	0.0	20.1	1
41992	00	V	700	21/ 92	23	0	100	-12.9	-1.4	15.6	1
41992	12	V	700	21/ 92	25	0	100	-12.6	-0.8	15.3	1
42182	00	V	150	29/ 77	20	0	100	-9.6	-9.6	25.3	4
42182	12	V	200	29/ 77	18	0	100	-10.8	-9.9	18.3	4
42339	00	V	250	26/ 73	22	0	100	-7.7	2.8	20.0	3
42339	12	V	100	26/ 73	20	0	95	-9.9	1.4	16.3	2
42369	00	V	150	27/ 81	19	1	100	-14.9	-2.5	22.4	2
42369	12	V	150	27/ 81	12	0	100	-5.0	-4.2	17.2	1
42379	00	V	500	27/ 83	10	0	100	-5.4	-1.3	17.0	1
42410	12	V	150	26/ 92	15	0	100	-1.2	-1.4	18.0	1
42492	00	V	250	26/ 85	10	0	100	-10.3	-0.8	24.9	1
42667	12	V	300	23/ 77	12	0	8	-3.9	0.7	15.6	1
42701	00	V	200	23/ 85	20	0	100	-28.9	-2.6	30.8	6
42701	12	V	200	23/ 85	21	0	100	-28.4	-1.9	30.8	6
43041	00	V	200	19/ 82	18	0	100	-11.6	-0.4	18.5	2
47058	00	V	400	39/ 126	10	0	100	-14.8	-3.5	21.0	2
58725	12	V	150	27/ 117	27	0	3	-2.3	0.3	17.7	3
58968	00	V	250	25/ 122	28	0	100	-10.1	-15.7	19.6	4
58968	12	V	250	25/ 122	27	0	100	-9.4	-14.5	18.7	3
60559	12	V	500	33/ 7	12	0	100	-9.6	2.3	18.0	1
60566	12	V	250	32/ 4	10	0	100	-11.4	-0.7	20.6	3
60590	12	V	250	31/ 3	18	0	100	-39.5	-6.8	42.8	7
60620	12	V	250	28/ 0	11	0	100	-38.6	-19.5	46.1	5
60656	12	V	250	28/ -8	21	0	100	-9.9	-1.2	22.3	1
62053	00	V	150	32/ 20	10	0	10	-7.4	-7.0	35.4	1
62306	00	V	200	31/ 27	15	0	100	9.5	-0.1	19.9	1
62306	12	V	250	31/ 27	13	0	100	2.9	-3.8	17.2	2
62337	00	V	150	31/ 34	21	0	100	-22.1	11.7	34.6	7
62337	12	V	150	31/ 34	19	0	100	-22.7	14.6	42.7	7
62378	12	V	300	30/ 31	10	0	100	-9.0	3.2	21.1	1
62403	00	V	200	26/ 33	18	1	100	6.9	-0.1	17.9	3
62403	12	V	150	26/ 33	10	0	100	-5.3	3.7	19.5	1
62423	12	V	150	27/ 28	12	0	100	-17.2	1.0	45.2	4
64910	12	V	300	4/ 10	18	0	5	3.4	-1.1	15.7	1
72376	00	V	250	37/-108	26	0	100	-7.1	-1.0	15.8	1
72376	12	V	300	37/-108	28	0	100	-2.0	-1.7	15.9	1
78073	12	V	500	25/ -77	25	0	4	-1.5	1.0	18.7	1
78397	12	V	850	18/ -77	10	1	100	3.9	3.5	15.7	1
83840	00	V	200	-26/ -49	17	0	11	-6.6	-1.8	21.5	1

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. FEBRUARY 2005
All hours
Global average number of observations in 24 hours = 1383

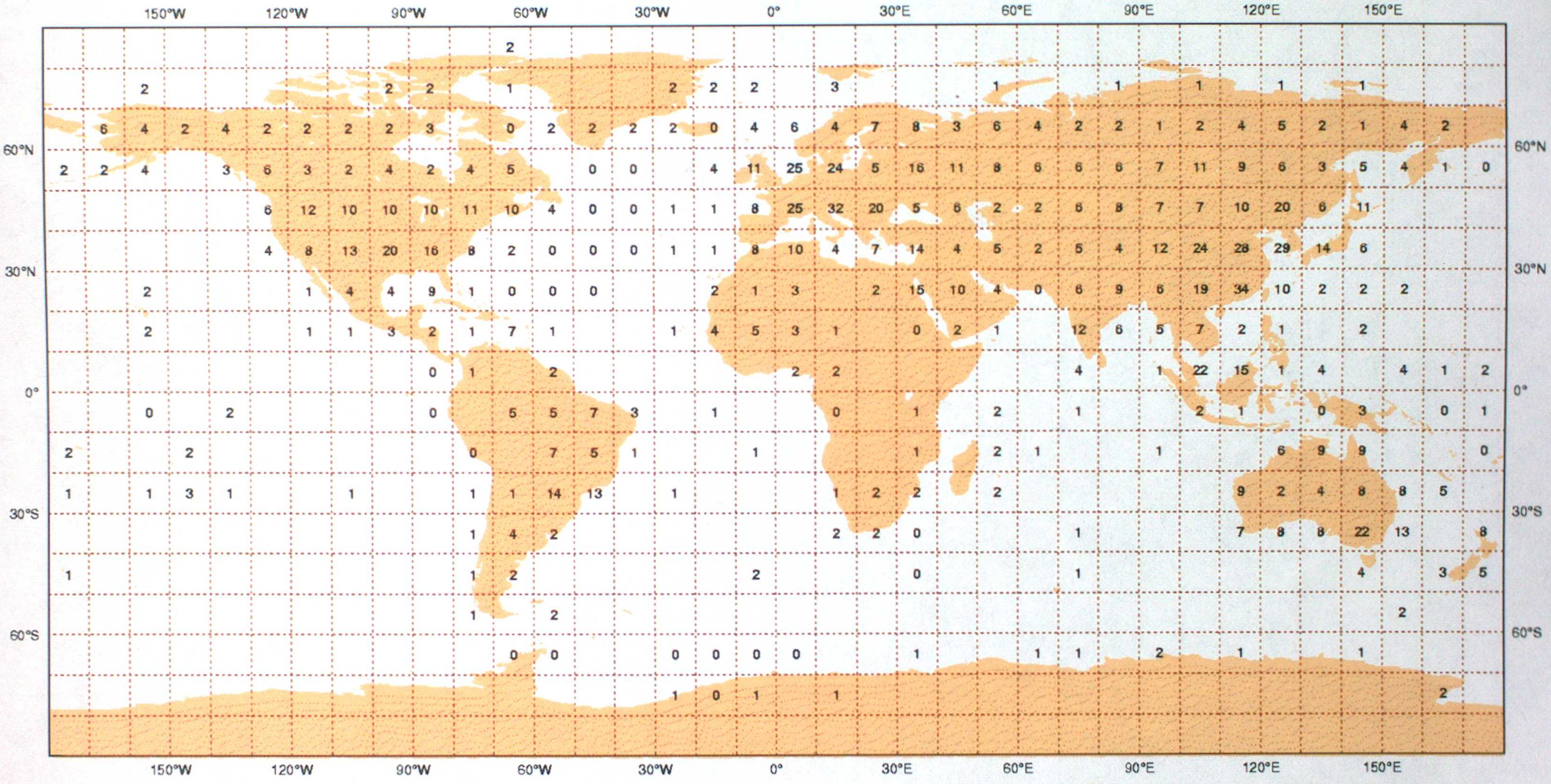

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2
2 2 2 1 2 2 2 3 1 1 1 1 1
6 4 2 4 2 2 2 2 3 0 2 2 2 2 0 4 6 4 7 8 3 6 4 2 2 1 2 4 5 2 1 4 2
2 2 4 3 6 3 2 4 2 4 5 0 0 4 11 25 24 5 16 11 8 6 6 6 7 11 9 6 3 5 4 1 0
6 12 10 10 10 11 10 4 0 0 1 1 8 25 32 20 5 6 2 2 6 8 7 7 10 20 6 11
4 8 13 20 16 8 2 0 0 0 1 1 8 10 4 7 14 4 5 2 5 4 12 24 28 29 14 6
2 1 4 4 9 1 0 0 0 2 1 3 2 15 10 4 0 6 9 6 19 34 10 2 2 2
2 1 1 3 2 1 7 1 1 4 5 3 1 0 2 1 12 6 5 7 2 1 2
0 1 2 2 2 4 1 22 15 1 4 4 1 2
0 2 0 5 5 7 3 1 0 1 2 1 2 1 0 3 0 1
2 2 0 7 5 1 1 1 2 1 1 6 9 9 0
1 1 3 1 1 1 1 14 13 1 1 2 2 2 9 2 4 8 8 5
1 4 2 2 2 0 1 7 8 8 22 13 8
1 1 2 2 0 1 4 3 5
1 2 2
0 0 0 0 0 0 1 1 1 2 1 1
1 0 1 1 2

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
26477	12	DD	56/ 31	18	-51.9	8.7	15.6
33791	12	DD	48/ 33	25	-14.4	3.1	10.9
43295	00	DD	13/ 78	24	-11.2	6.3	14.8
43295	12	DD	13/ 78	24	-14.3	6.6	18.0
48407	12	DD	15/ 105	24	11.7	7.9	22.2
58968	00	DD	25/ 122	28	17.9	1.9	5.0
58968	12	DD	25/ 122	27	18.0	1.5	4.4
62337	00	DD	31/ 34	25	-18.6	2.0	6.4

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: EXETER

MONTH: Feb 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES-9, GOES-10, GOES-12, METEOSAT-5, METEOSAT-7

Standard of comparison :Background field from UKMO global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

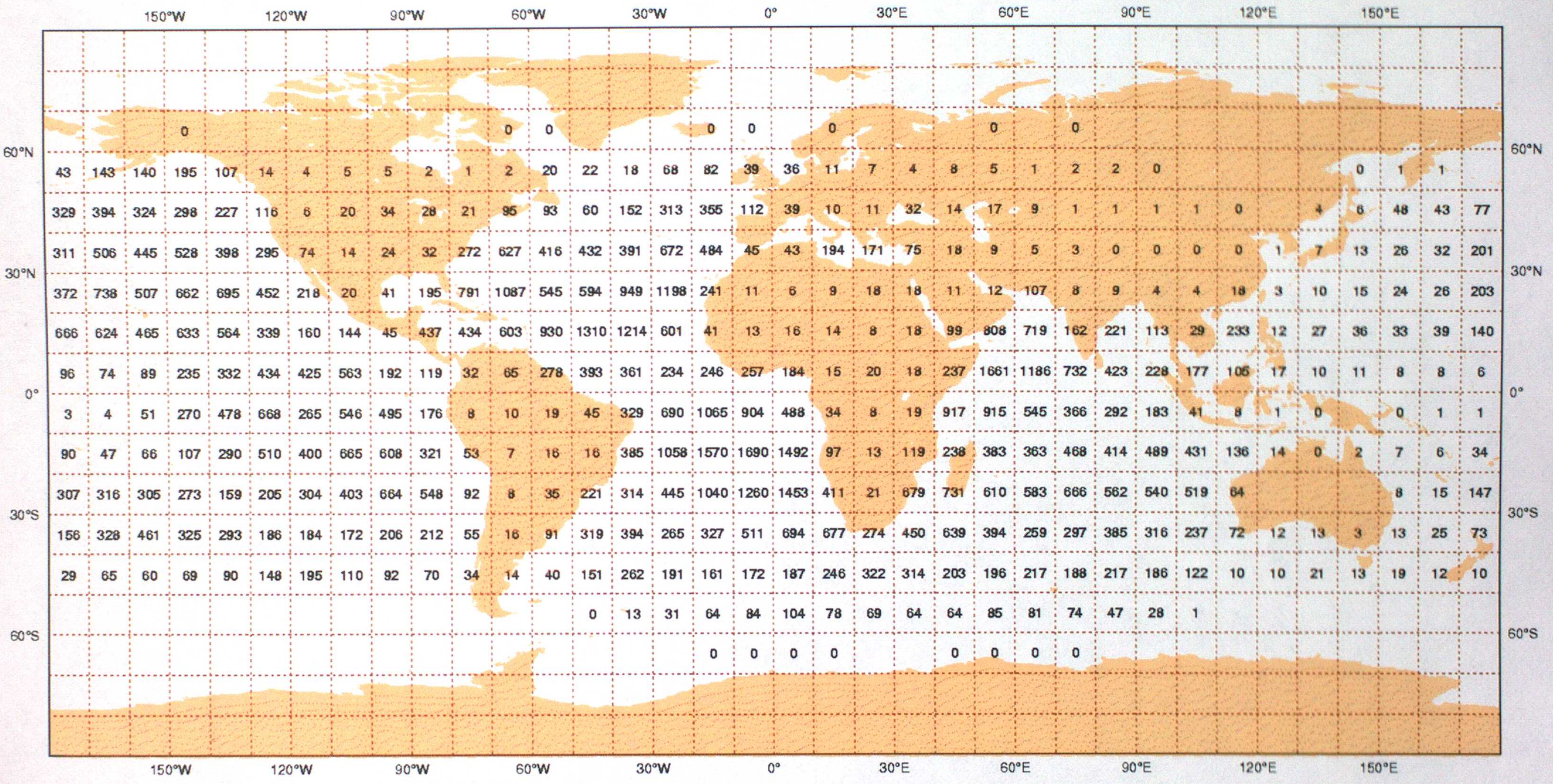
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. FEBRUARY 2005
Global average number of observations in 24 hours = 93310



			0								0	0				0	0		0				0		0										
43	143	140	195	107	14	4	5	5	2	1	2	20	22	18	68	82	39	36	11	7	4	8	5	1	2	2	0					0	1	1	
329	394	324	298	227	116	6	20	34	28	21	95	93	60	152	313	355	112	39	10	11	32	14	17	9	1	1	1	1	0		4	6	48	43	77
311	506	445	528	398	295	74	14	24	32	272	627	416	432	391	672	484	45	43	194	171	75	18	9	5	3	0	0	0	0	1	7	13	26	32	201
372	738	507	662	695	452	218	20	41	195	791	1087	545	594	949	1198	241	11	6	9	18	18	11	12	107	8	9	4	4	18	3	10	15	24	26	203
666	624	465	633	564	339	160	144	45	437	434	603	930	1310	1214	601	41	13	16	14	8	18	99	808	719	162	221	113	29	233	12	27	36	33	39	140
96	74	89	235	332	434	425	563	192	119	32	65	278	393	361	234	246	257	184	15	20	18	237	1661	1186	732	423	228	177	105	17	10	11	8	8	6
3	4	51	270	478	668	265	546	495	176	8	10	19	45	329	690	1065	904	488	34	8	19	917	915	545	366	292	183	41	8	1	0		0	1	1
90	47	66	107	290	510	400	665	608	321	53	7	16	16	385	1058	1570	1690	1492	97	13	119	238	383	363	468	414	489	431	136	14	0	2	7	6	34
307	316	305	273	159	205	304	403	664	548	92	8	35	221	314	445	1040	1260	1453	411	21	679	731	610	583	666	562	540	519	64				8	15	147
156	328	461	325	293	186	184	172	206	212	55	16	91	319	394	265	327	511	694	677	274	450	639	394	259	297	385	316	237	72	12	13	3	13	25	73
29	65	60	69	90	148	195	110	92	70	34	14	40	151	262	191	161	172	187	246	322	314	203	196	217	188	217	186	122	10	10	21	13	19	12	10
													0	13	31	64	84	104	78	69	64	64	85	81	74	47	28	1							
																0	0	0	0			0	0	0	0										

Figure 11. SATOB 701 - 1000 hPa vector mean wind. FEBRUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

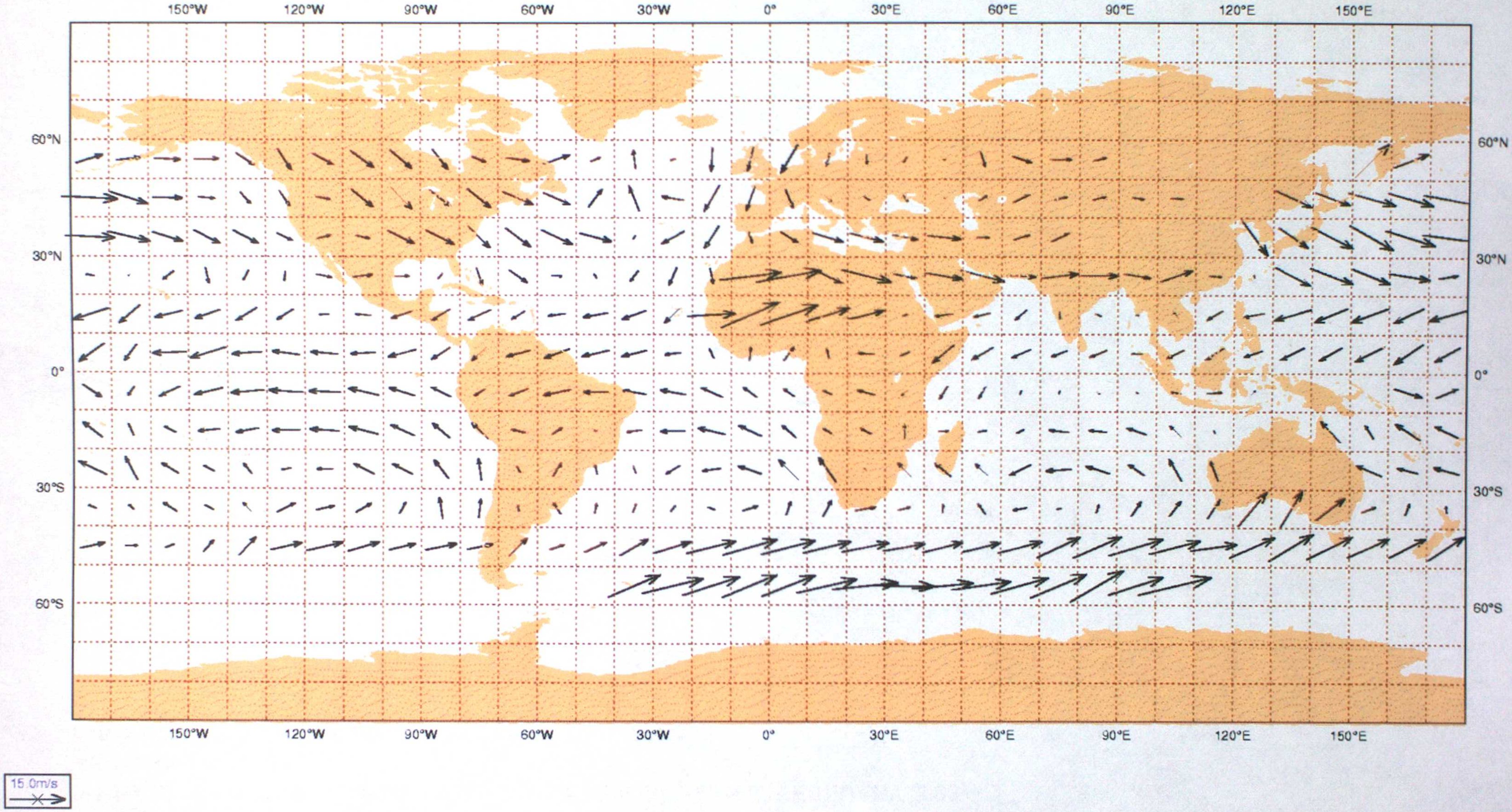

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 12. SATOB 701 - 1000 hPa mean vector wind differences. FEBRUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

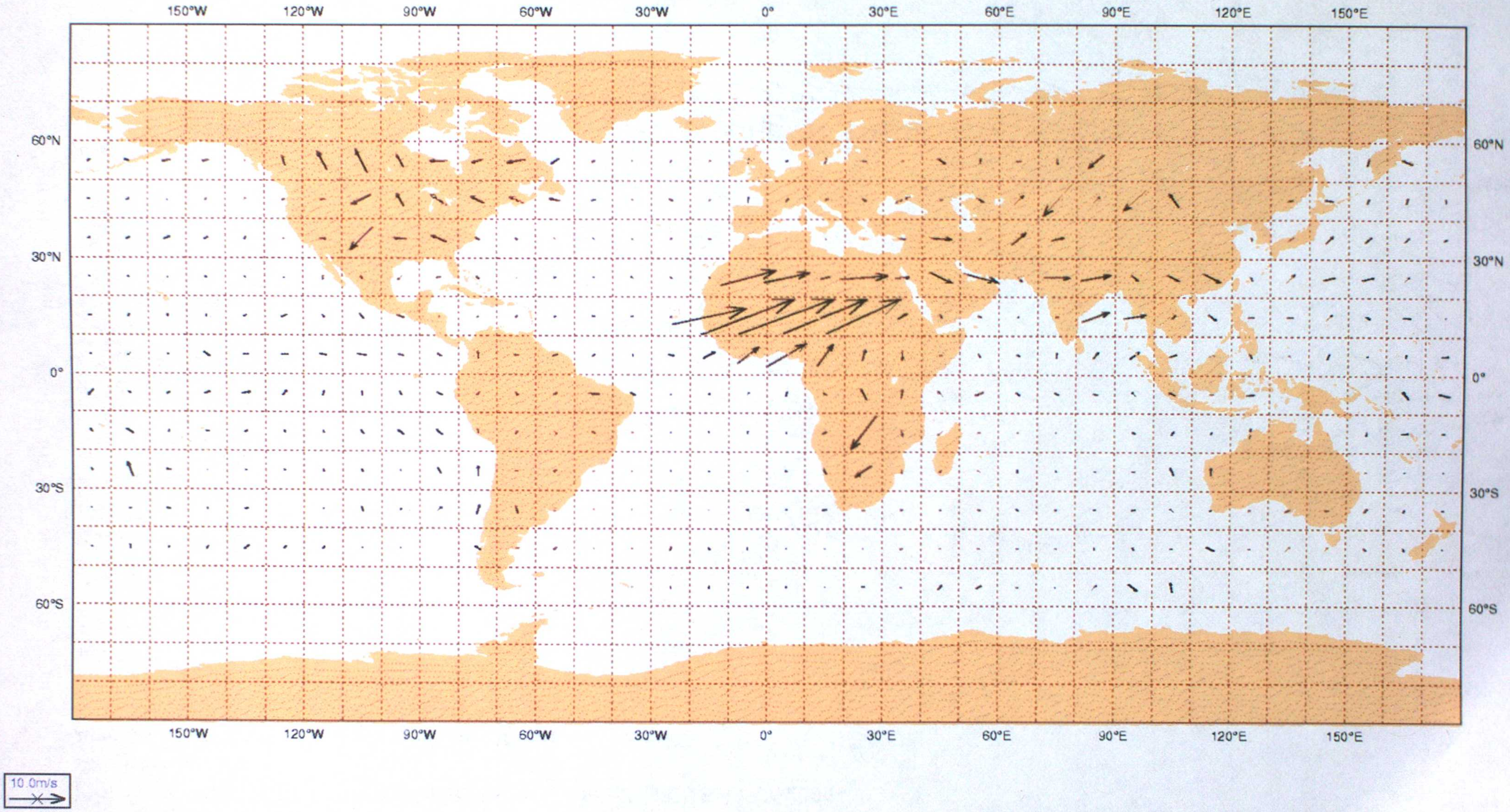
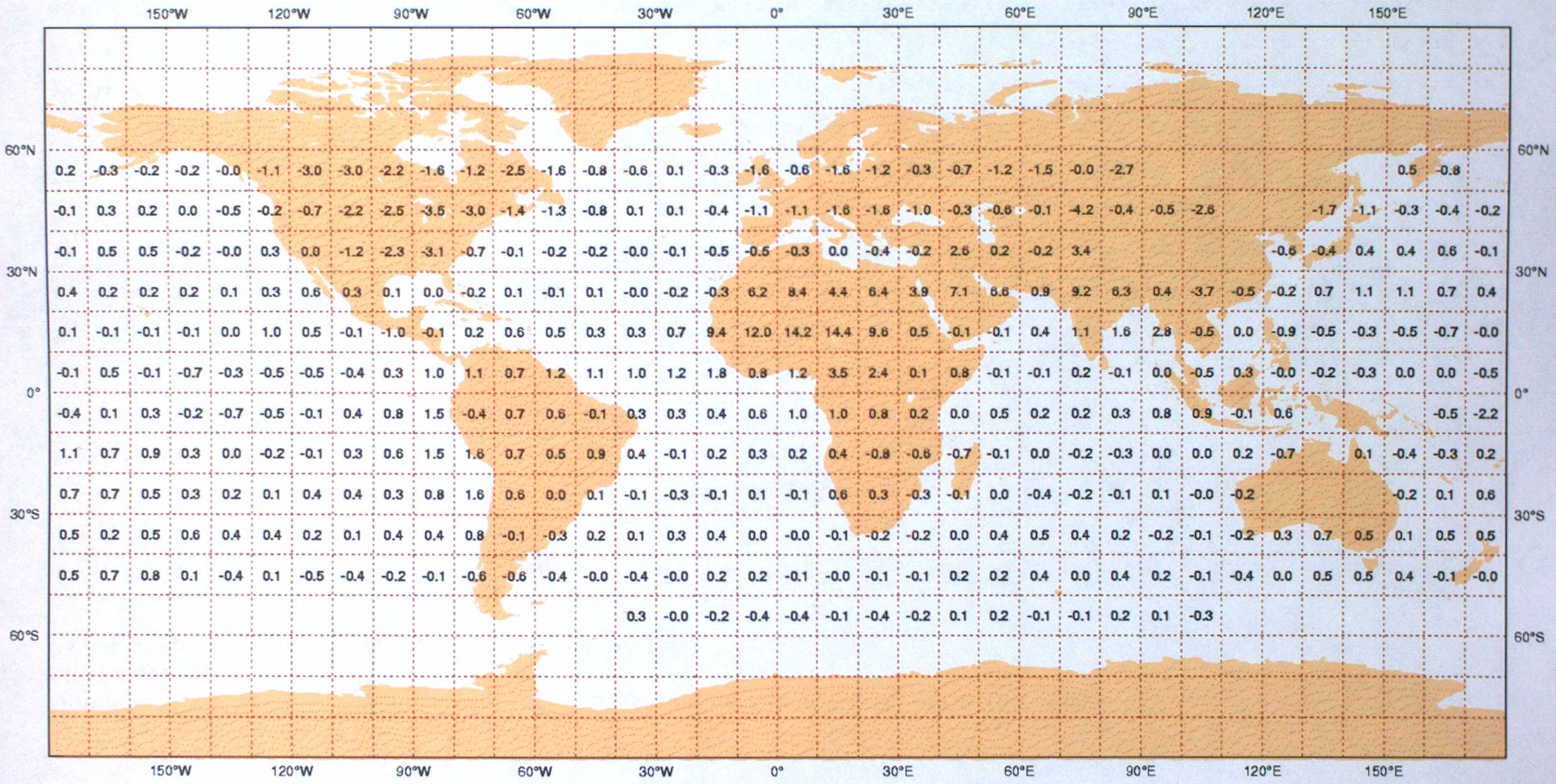

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). FEBRUARY 2005
All observations
Values are plotted where greater than 10 obs are present



0.2	-0.3	-0.2	-0.2	-0.0	-1.1	-3.0	-3.0	-2.2	-1.6	-1.2	-2.5	-1.6	-0.8	-0.6	0.1	-0.3	-1.6	-0.6	-1.6	-1.2	-0.3	-0.7	-1.2	-1.5	-0.0	-2.7							0.5	-0.8	
-0.1	0.3	0.2	0.0	-0.5	-0.2	-0.7	-2.2	-2.5	-3.5	-3.0	-1.4	-1.3	-0.8	0.1	0.1	-0.4	-1.1	-1.1	-1.6	-1.6	-1.0	-0.3	-0.6	-0.1	-4.2	-0.4	-0.5	-2.6			-1.7	-1.1	-0.3	-0.4	-0.2
-0.1	0.5	0.5	-0.2	-0.0	0.3	0.0	-1.2	-2.3	-3.1	-0.7	-0.1	-0.2	-0.2	-0.0	-0.1	-0.5	-0.5	-0.3	0.0	-0.4	-0.2	2.6	0.2	-0.2	3.4					-0.6	-0.4	0.4	0.4	0.6	-0.1
0.4	0.2	0.2	0.2	0.1	0.3	0.6	0.3	0.1	0.0	-0.2	0.1	-0.1	0.1	-0.0	-0.2	-0.3	6.2	8.4	4.4	6.4	3.9	7.1	6.6	0.9	9.2	6.3	0.4	-3.7	-0.5	-0.2	0.7	1.1	1.1	0.7	0.4
0.1	-0.1	-0.1	-0.1	0.0	1.0	0.5	-0.1	-1.0	-0.1	0.2	0.6	0.5	0.3	0.3	0.7	9.4	12.0	14.2	14.4	9.6	0.5	-0.1	-0.1	0.4	1.1	1.6	2.8	-0.5	0.0	-0.9	-0.5	-0.3	-0.5	-0.7	-0.0
-0.1	0.5	-0.1	-0.7	-0.3	-0.5	-0.5	-0.4	0.3	1.0	1.1	0.7	1.2	1.1	1.0	1.2	1.8	0.8	1.2	3.5	2.4	0.1	0.8	-0.1	-0.1	0.2	-0.1	0.0	-0.5	0.3	-0.0	-0.2	-0.3	0.0	0.0	-0.5
-0.4	0.1	0.3	-0.2	-0.7	-0.5	-0.1	0.4	0.8	1.5	-0.4	0.7	0.6	-0.1	0.3	0.3	0.4	0.6	1.0	1.0	0.8	0.2	0.0	0.5	0.2	0.2	0.3	0.8	0.9	-0.1	0.6				-0.5	-2.2
1.1	0.7	0.9	0.3	0.0	-0.2	-0.1	0.3	0.6	1.5	1.6	0.7	0.5	0.9	0.4	-0.1	0.2	0.3	0.2	0.4	-0.8	-0.6	-0.7	-0.1	0.0	-0.2	-0.3	0.0	0.0	0.2	-0.7		0.1	-0.4	-0.3	0.2
0.7	0.7	0.5	0.3	0.2	0.1	0.4	0.4	0.3	0.8	1.6	0.6	0.0	0.1	-0.1	-0.3	-0.1	0.1	-0.1	0.6	0.3	-0.3	-0.1	0.0	-0.4	-0.2	-0.1	0.1	-0.0	-0.2				-0.2	0.1	0.6
0.5	0.2	0.5	0.6	0.4	0.4	0.2	0.1	0.4	0.4	0.8	-0.1	-0.3	0.2	0.1	0.3	0.4	0.0	-0.0	-0.1	-0.2	-0.2	0.0	0.4	0.5	0.4	0.2	-0.2	-0.1	-0.2	0.3	0.7	0.5	0.1	0.5	0.5
0.5	0.7	0.8	0.1	-0.4	0.1	-0.5	-0.4	-0.2	-0.1	-0.6	-0.6	-0.4	-0.0	-0.4	-0.0	0.2	0.2	-0.1	-0.0	-0.1	-0.1	0.2	0.2	0.4	0.0	0.4	0.2	-0.1	-0.4	0.0	0.5	0.5	0.4	-0.1	-0.0
														0.3	-0.0	-0.2	-0.4	-0.4	-0.1	-0.4	-0.2	0.1	0.2	-0.1	-0.1	0.2	0.1	-0.3							

Figure 14. SATOB 701 - 1000 hPa mean RMS O-B vector differences (ms-1). FEBRUARY 2005
All observations
Values are plotted where greater than 10 obs are present

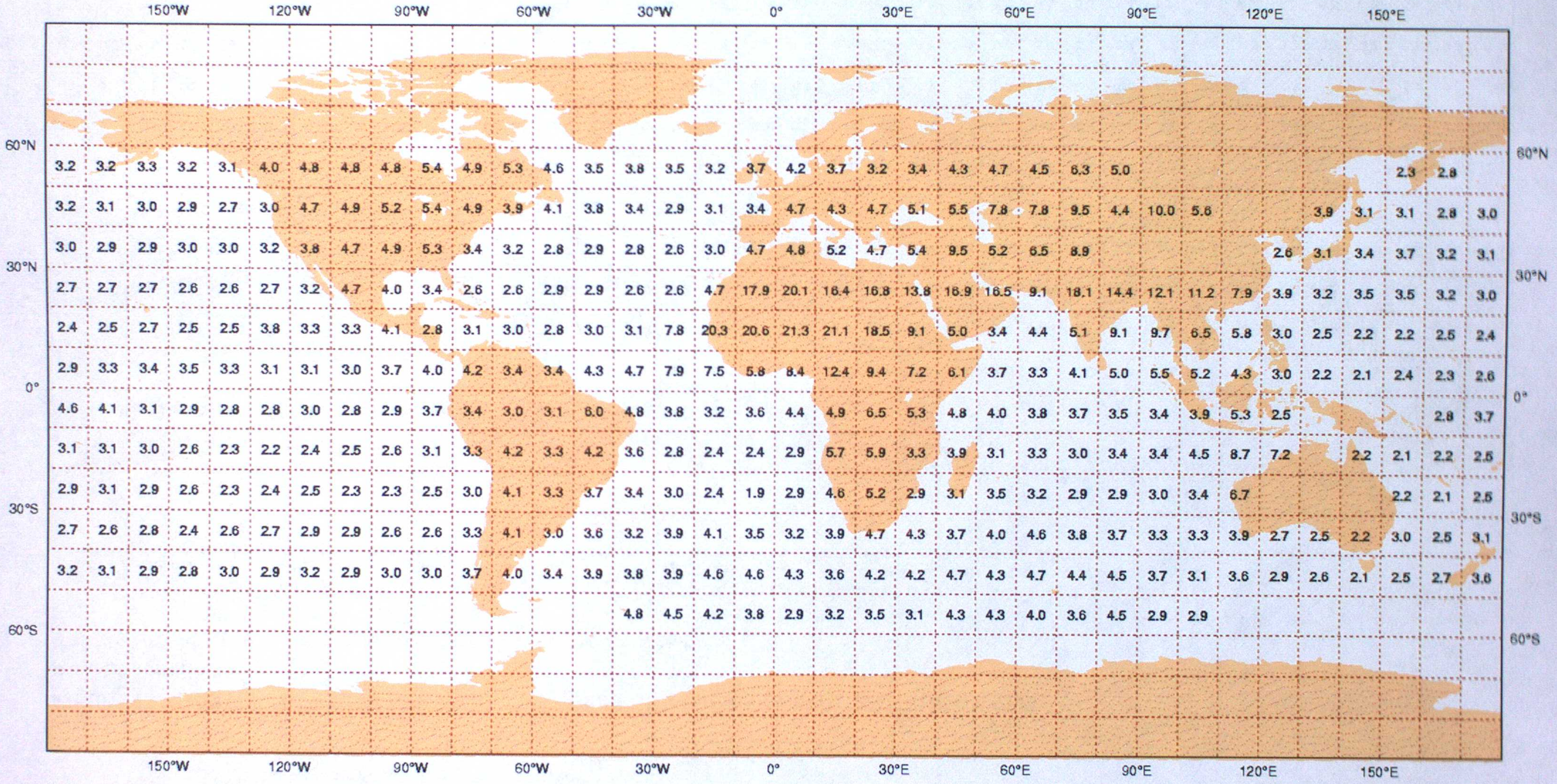
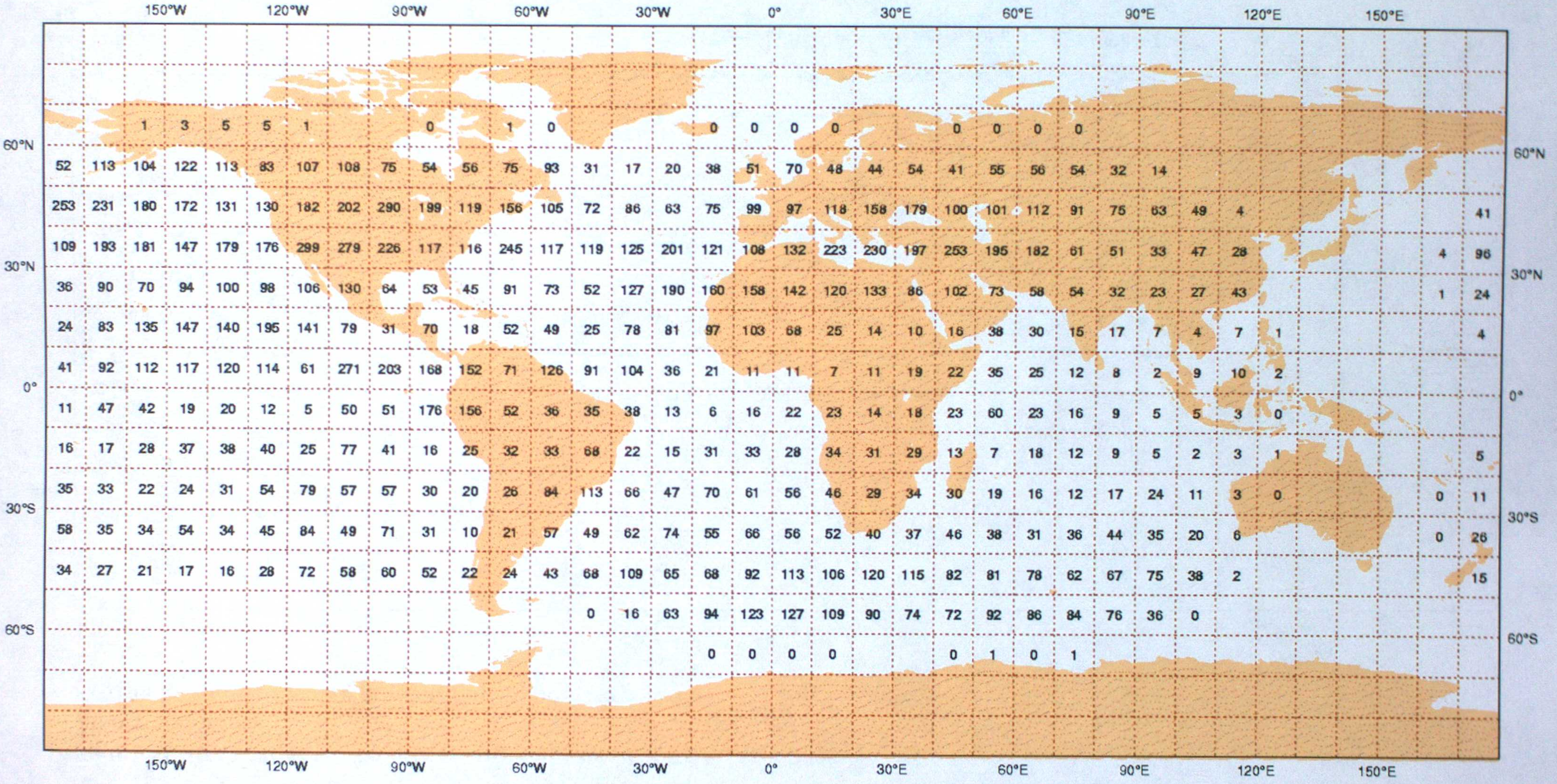

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
3.2 3.2 3.3 3.2 3.1 4.0 4.8 4.8 4.8 5.4 4.9 5.3 4.6 3.5 3.8 3.5 3.2 3.7 4.2 3.7 3.2 3.4 4.3 4.7 4.5 6.3 5.0 2.3 2.8
3.2 3.1 3.0 2.9 2.7 3.0 4.7 4.9 5.2 5.4 4.9 3.9 4.1 3.8 3.4 2.9 3.1 3.4 4.7 4.3 4.7 5.1 5.5 7.8 7.8 9.5 4.4 10.0 5.6 3.9 3.1 3.1 2.8 3.0
3.0 2.9 2.9 3.0 3.0 3.2 3.8 4.7 4.9 5.3 3.4 3.2 2.8 2.9 2.8 2.6 3.0 4.7 4.8 5.2 4.7 5.4 9.5 5.2 6.5 8.9 2.6 3.1 3.4 3.7 3.2 3.1
2.7 2.7 2.7 2.6 2.6 2.7 3.2 4.7 4.0 3.4 2.6 2.6 2.9 2.9 2.6 2.6 4.7 17.9 20.1 16.4 16.8 13.8 16.9 16.5 9.1 18.1 14.4 12.1 11.2 7.9 3.9 3.2 3.5 3.5 3.2 3.0
2.4 2.5 2.7 2.5 2.5 3.8 3.3 3.3 4.1 2.8 3.1 3.0 2.8 3.0 3.1 7.8 20.3 20.6 21.3 21.1 18.5 9.1 5.0 3.4 4.4 5.1 9.1 9.7 6.5 5.8 3.0 2.5 2.2 2.2 2.5 2.4
2.9 3.3 3.4 3.5 3.3 3.1 3.1 3.0 3.7 4.0 4.2 3.4 3.4 4.3 4.7 7.9 7.5 5.8 8.4 12.4 9.4 7.2 6.1 3.7 3.3 4.1 5.0 5.5 5.2 4.3 3.0 2.2 2.1 2.4 2.3 2.6
4.6 4.1 3.1 2.9 2.8 2.8 3.0 2.8 2.9 3.7 3.4 3.0 3.1 6.0 4.8 3.8 3.2 3.6 4.4 4.9 6.5 5.3 4.8 4.0 3.8 3.7 3.5 3.4 3.9 5.3 2.5 2.8 3.7
3.1 3.1 3.0 2.6 2.3 2.2 2.4 2.5 2.6 3.1 3.3 4.2 3.3 4.2 3.6 2.8 2.4 2.4 2.9 5.7 5.9 3.3 3.9 3.1 3.3 3.0 3.4 3.4 4.5 8.7 7.2 2.2 2.1 2.2 2.5
2.9 3.1 2.9 2.6 2.3 2.4 2.5 2.3 2.3 2.5 3.0 4.1 3.3 3.7 3.4 3.0 2.4 1.9 2.9 4.6 5.2 2.9 3.1 3.5 3.2 2.9 2.9 3.0 3.4 6.7 2.2 2.1 2.5
2.7 2.6 2.8 2.4 2.6 2.7 2.9 2.9 2.6 2.6 3.3 4.1 3.0 3.6 3.2 3.9 4.1 3.5 3.2 3.9 4.7 4.3 3.7 4.0 4.6 3.8 3.7 3.3 3.3 3.9 2.7 2.5 2.2 3.0 2.5 3.1
3.2 3.1 2.9 2.8 3.0 2.9 3.2 2.9 3.0 3.0 3.7 4.0 3.4 3.9 3.8 3.9 4.6 4.6 4.3 3.6 4.2 4.2 4.7 4.3 4.7 4.4 4.5 3.7 3.1 3.6 2.9 2.6 2.1 2.5 2.7 3.6
4.8 4.5 4.2 3.8 2.9 3.2 3.5 3.1 4.3 4.3 4.0 3.6 4.5 2.9 2.9

Figure 15. SATOB 401 - 700 hPa mean daily count. FEBRUARY 2005
Global average number of observations in 24 hours = 24406



		1	3	5	5	1			0		1	0				0	0	0	0			0	0	0	0										
52	113	104	122	113	83	107	108	75	54	56	75	93	31	17	20	38	51	70	48	44	54	41	55	56	54	32	14								
253	231	180	172	131	130	182	202	290	199	119	156	105	72	86	63	75	99	97	118	158	179	100	101	112	91	75	63	49	4						41
109	193	181	147	179	176	299	279	226	117	116	245	117	119	125	201	121	108	132	223	230	197	253	195	182	61	51	33	47	28					4	96
36	90	70	94	100	98	106	130	64	53	45	91	73	52	127	190	160	158	142	120	133	86	102	73	58	54	32	23	27	43					1	24
24	83	135	147	140	195	141	79	31	70	18	52	49	25	78	81	97	103	68	25	14	10	16	38	30	15	17	7	4	7	1					4
41	92	112	117	120	114	61	271	203	168	152	71	126	91	104	36	21	11	11	7	11	19	22	35	25	12	8	2	9	10	2					
11	47	42	19	20	12	5	50	51	176	156	52	36	35	38	13	6	16	22	23	14	18	23	60	23	16	9	5	5	3	0					
16	17	28	37	38	40	25	77	41	16	25	32	33	68	22	15	31	33	28	34	31	29	13	7	18	12	9	5	2	3	1					5
35	33	22	24	31	54	79	57	57	30	20	26	84	113	66	47	70	61	56	46	29	34	30	19	16	12	17	24	11	3	0				0	11
58	35	34	54	34	45	84	49	71	31	10	21	57	49	62	74	55	66	56	52	40	37	46	38	31	36	44	35	20	6					0	26
34	27	21	17	16	28	72	58	60	52	22	24	43	68	109	65	68	92	113	106	120	115	82	81	78	62	67	75	38	2						15
													0	16	63	94	123	127	109	90	74	72	92	86	84	76	36	0							
																0	0	0	0			0	1	0	1										

Figure 16. SATOB 401 - 700 hPa vector mean wind. FEBRUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

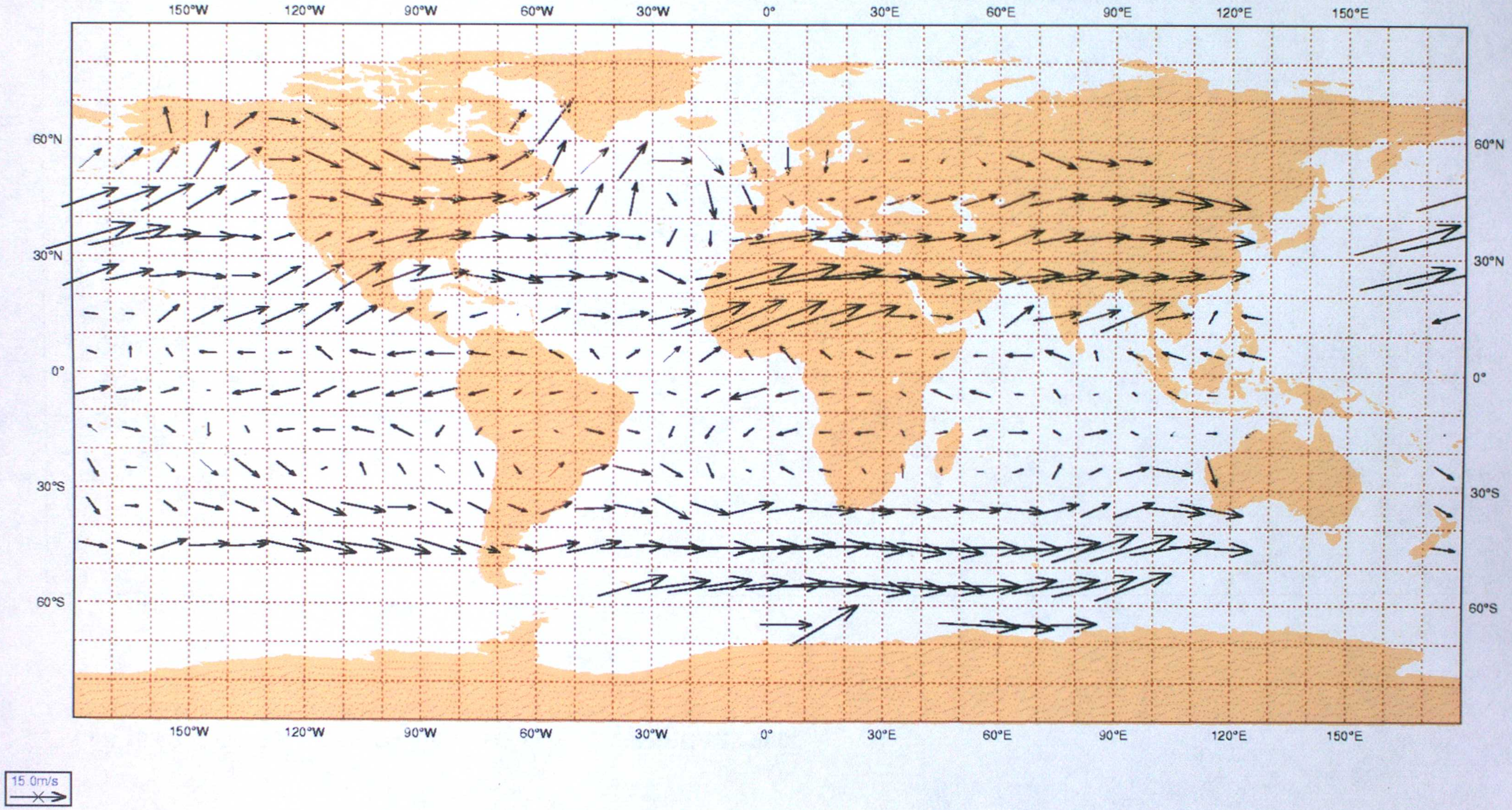

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 17. SATOB 401 - 700 hPa mean vector wind differences. FEBRUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

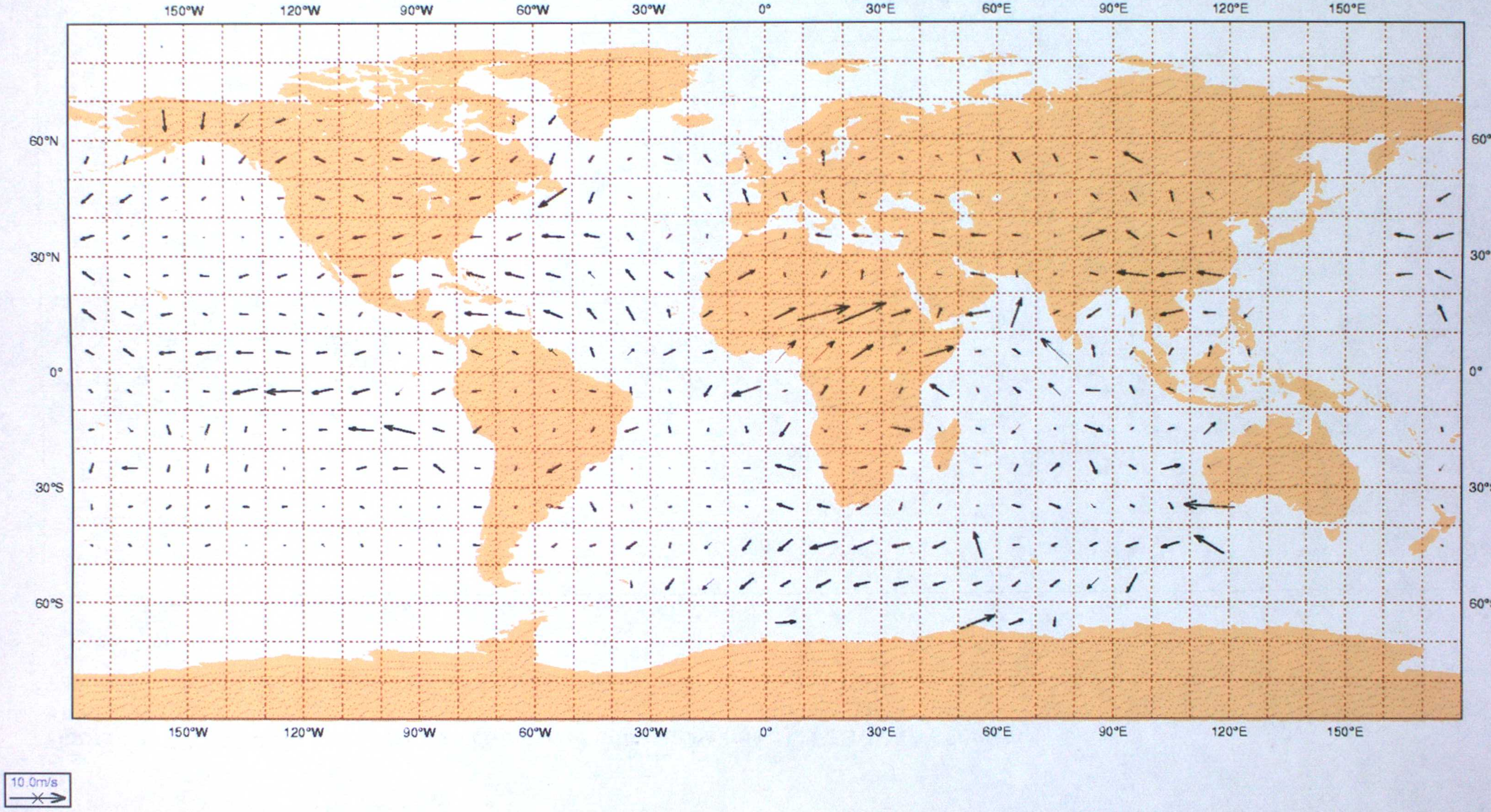

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). FEBRUARY 2005
All observations
Values are plotted where greater than 10 obs are present

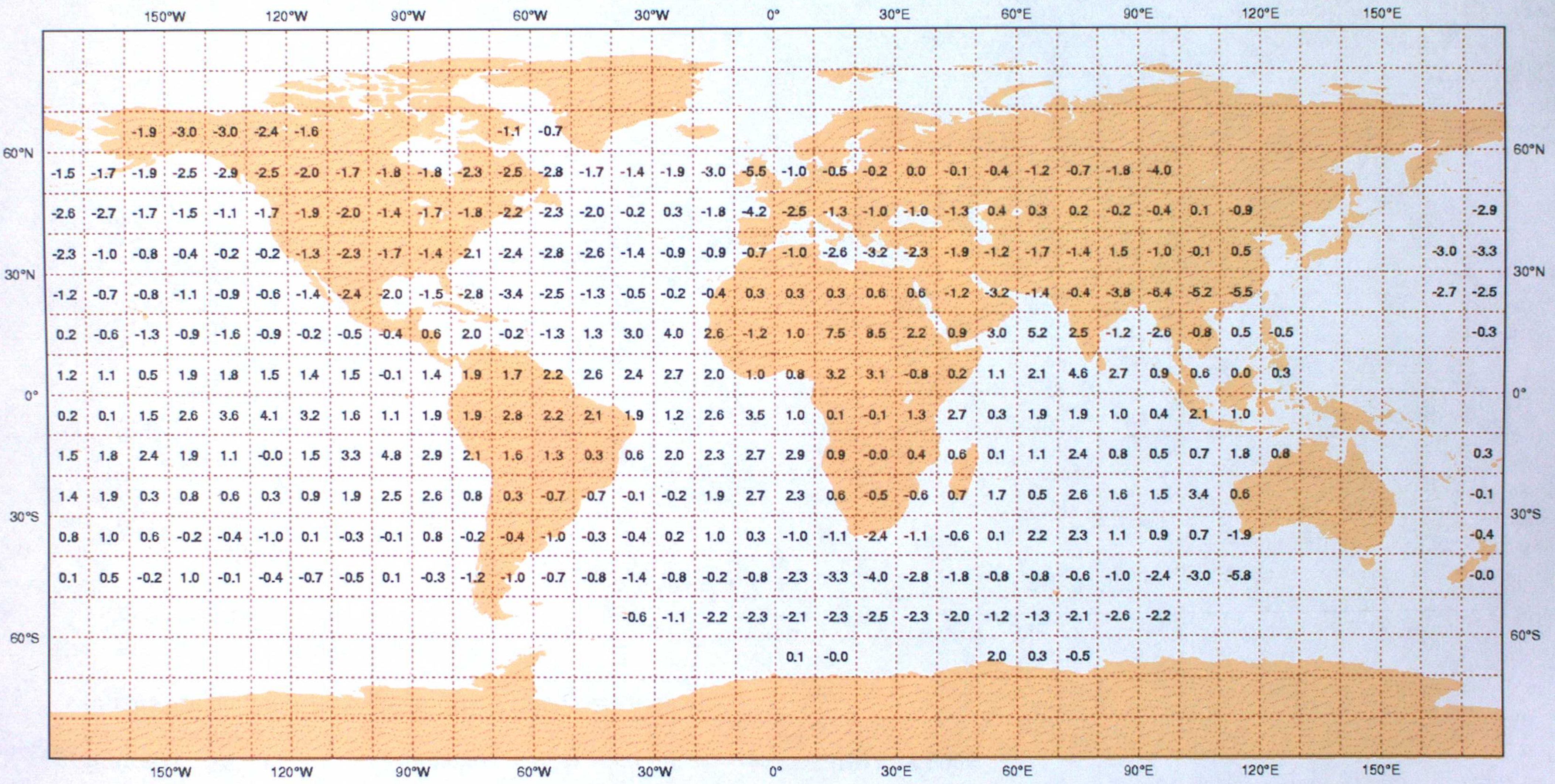

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-1.9 -3.0 -3.0 -2.4 -1.6 -1.1 -0.7
-1.5 -1.7 -1.9 -2.5 -2.9 -2.5 -2.0 -1.7 -1.8 -1.8 -2.3 -2.5 -2.8 -1.7 -1.4 -1.9 -3.0 -5.5 -1.0 -0.5 -0.2 0.0 -0.1 -0.4 -1.2 -0.7 -1.8 -4.0
-2.6 -2.7 -1.7 -1.5 -1.1 -1.7 -1.9 -2.0 -1.4 -1.7 -1.8 -2.2 -2.3 -2.0 -0.2 0.3 -1.8 -4.2 -2.5 -1.3 -1.0 -1.0 -1.3 0.4 0.3 0.2 -0.2 -0.4 0.1 -0.9 -2.9
-2.3 -1.0 -0.8 -0.4 -0.2 -0.2 -1.3 -2.3 -1.7 -1.4 -2.1 -2.4 -2.8 -2.6 -1.4 -0.9 -0.9 -0.7 -1.0 -2.6 -3.2 -2.3 -1.9 -1.2 -1.7 -1.4 1.5 -1.0 -0.1 0.5 -3.0 -3.3
-1.2 -0.7 -0.8 -1.1 -0.9 -0.6 -1.4 -2.4 -2.0 -1.5 -2.8 -3.4 -2.5 -1.3 -0.5 -0.2 -0.4 0.3 0.3 0.3 0.6 0.6 -1.2 -3.2 -1.4 -0.4 -3.8 -6.4 -5.2 -5.5 -2.7 -2.5
0.2 -0.6 -1.3 -0.9 -1.6 -0.9 -0.2 -0.5 -0.4 0.6 2.0 -0.2 -1.3 1.3 3.0 4.0 2.6 -1.2 1.0 7.5 8.5 2.2 0.9 3.0 5.2 2.5 -1.2 -2.6 -0.8 0.5 -0.5 -0.3
1.2 1.1 0.5 1.9 1.8 1.5 1.4 1.5 -0.1 1.4 1.9 1.7 2.2 2.6 2.4 2.7 2.0 1.0 0.8 3.2 3.1 -0.8 0.2 1.1 2.1 4.6 2.7 0.9 0.6 0.0 0.3
0.2 0.1 1.5 2.6 3.6 4.1 3.2 1.6 1.1 1.9 1.9 2.8 2.2 2.1 1.9 1.2 2.6 3.5 1.0 0.1 -0.1 1.3 2.7 0.3 1.9 1.9 1.0 0.4 2.1 1.0
1.5 1.8 2.4 1.9 1.1 -0.0 1.5 3.3 4.8 2.9 2.1 1.6 1.3 0.3 0.6 2.0 2.3 2.7 2.9 0.9 -0.0 0.4 0.6 0.1 1.1 2.4 0.8 0.5 0.7 1.8 0.8 0.3
1.4 1.9 0.3 0.8 0.6 0.3 0.9 1.9 2.5 2.6 0.8 0.3 -0.7 -0.7 -0.1 -0.2 1.9 2.7 2.3 0.6 -0.5 -0.6 0.7 1.7 0.5 2.6 1.6 1.5 3.4 0.6 -0.1
0.8 1.0 0.6 -0.2 -0.4 -1.0 0.1 -0.3 -0.1 0.8 -0.2 -0.4 -1.0 -0.3 -0.4 0.2 1.0 0.3 -1.0 -1.1 -2.4 -1.1 -0.6 0.1 2.2 2.3 1.1 0.9 0.7 -1.9 -0.4
0.1 0.5 -0.2 1.0 -0.1 -0.4 -0.7 -0.5 0.1 -0.3 -1.2 -1.0 -0.7 -0.8 -1.4 -0.8 -0.2 -0.8 -2.3 -3.3 -4.0 -2.8 -1.8 -0.8 -0.8 -0.6 -1.0 -2.4 -3.0 -5.8 -0.0
-0.6 -1.1 -2.2 -2.3 -2.1 -2.3 -2.5 -2.3 -2.0 -1.2 -1.3 -2.1 -2.6 -2.2
0.1 -0.0 2.0 0.3 -0.5

Figure 19. SATOB 401 - 700 hPa mean RMS O-B vector differences (ms-1). FEBRUARY 2005
All observations
Values are plotted where greater than 10 obs are present

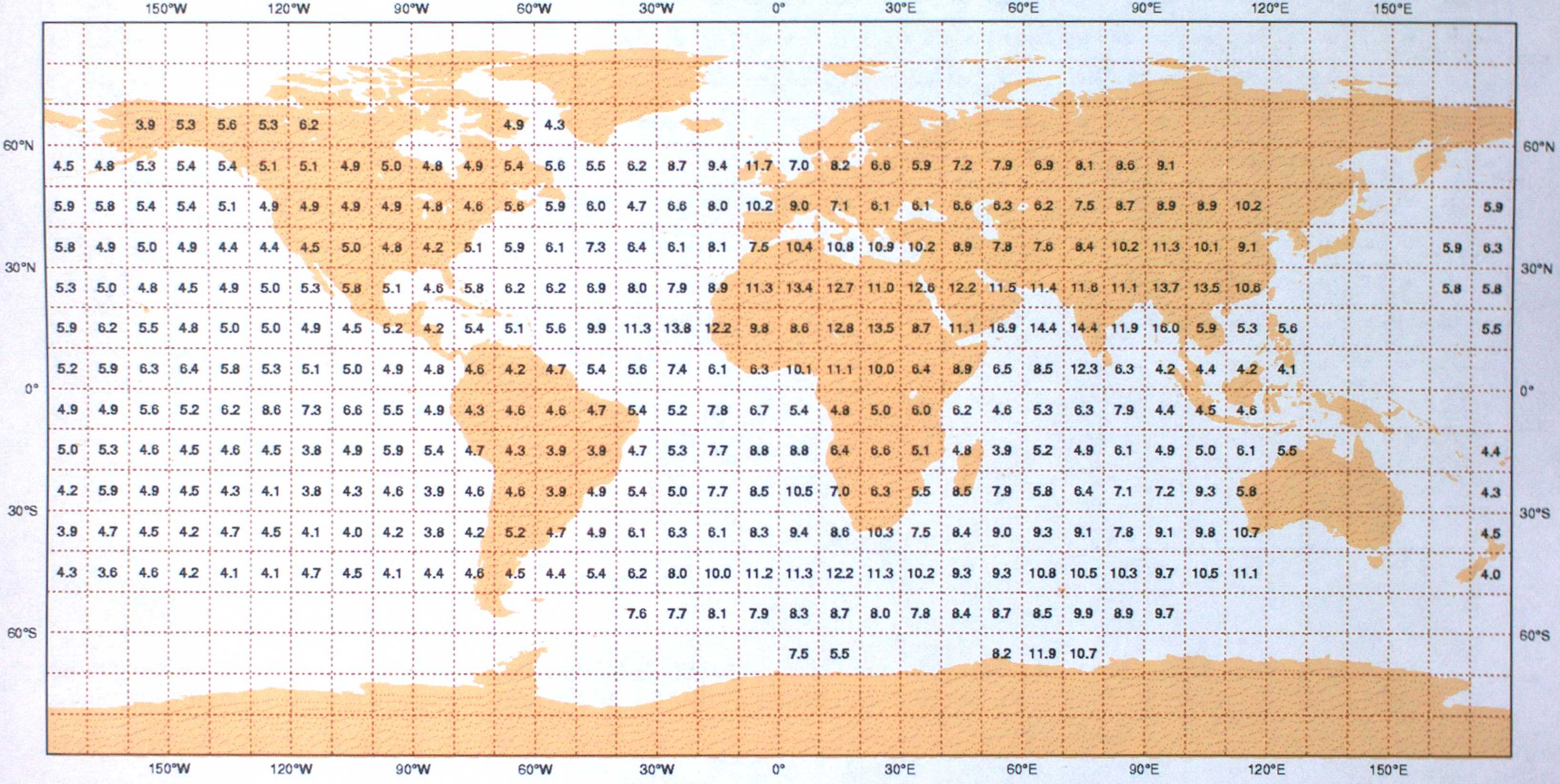
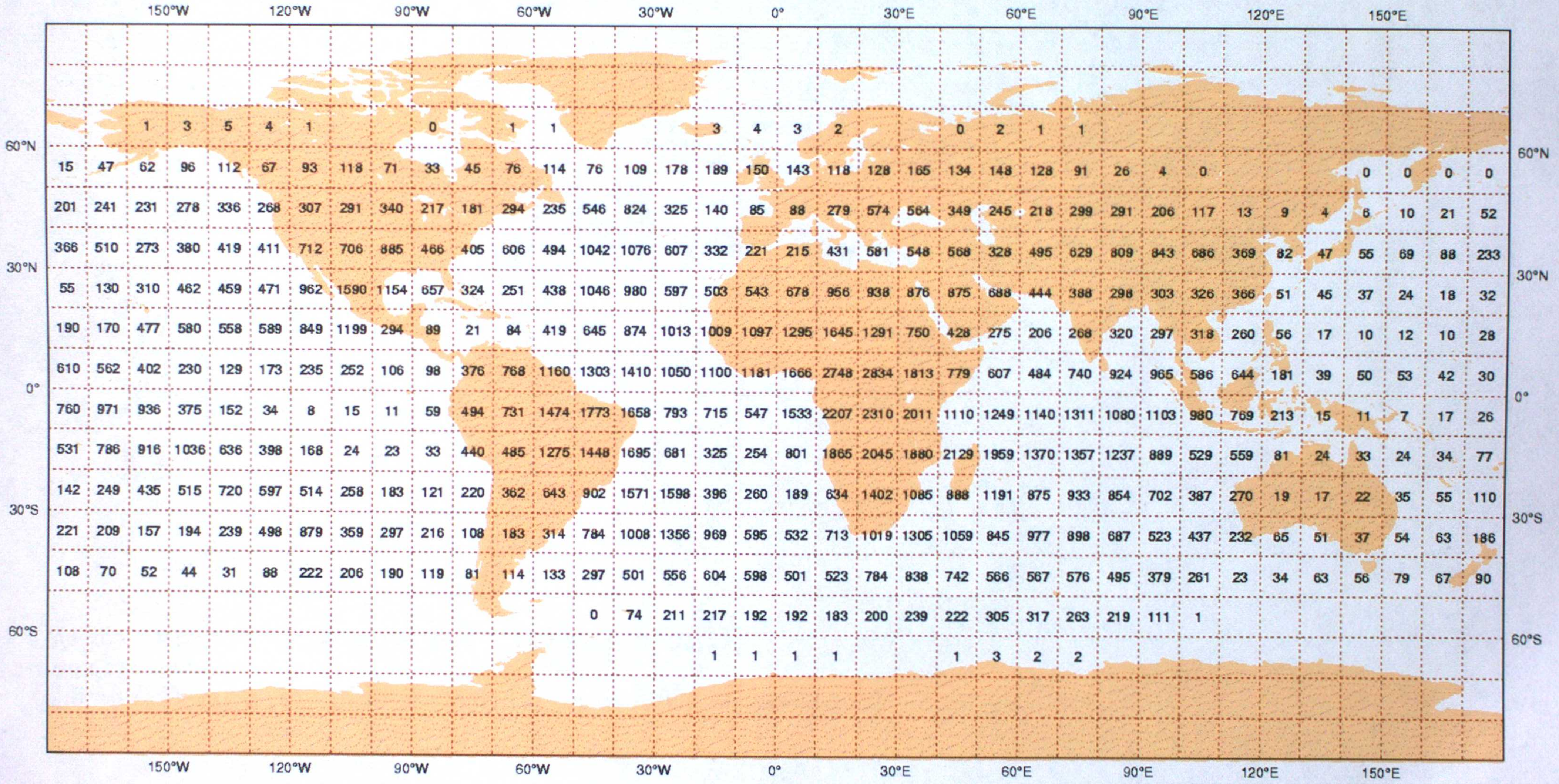

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
3.9 5.3 5.6 5.3 6.2 4.9 4.3
4.5 4.8 5.3 5.4 5.4 5.1 5.1 4.9 5.0 4.8 4.9 5.4 5.6 5.5 6.2 8.7 9.4 11.7 7.0 8.2 6.6 5.9 7.2 7.9 6.9 8.1 8.6 9.1
5.9 5.8 5.4 5.4 5.1 4.9 4.9 4.9 4.9 4.8 4.6 5.6 5.9 6.0 4.7 6.6 8.0 10.2 9.0 7.1 6.1 6.1 6.6 6.3 6.2 7.5 8.7 8.9 8.9 10.2 5.9
5.8 4.9 5.0 4.9 4.4 4.4 4.5 5.0 4.8 4.2 5.1 5.9 6.1 7.3 6.4 6.1 8.1 7.5 10.4 10.8 10.9 10.2 8.9 7.8 7.6 8.4 10.2 11.3 10.1 9.1 5.9 6.3
5.3 5.0 4.8 4.5 4.9 5.0 5.3 5.8 5.1 4.6 5.8 6.2 6.2 6.9 8.0 7.9 8.9 11.3 13.4 12.7 11.0 12.6 12.2 11.5 11.4 11.6 11.1 13.7 13.5 10.6 5.8 5.8
5.9 6.2 5.5 4.8 5.0 5.0 4.9 4.5 5.2 4.2 5.4 5.1 5.6 9.9 11.3 13.8 12.2 9.8 8.6 12.8 13.5 8.7 11.1 16.9 14.4 14.4 11.9 16.0 5.9 5.3 5.6 5.5
5.2 5.9 6.3 6.4 5.8 5.3 5.1 5.0 4.9 4.8 4.6 4.2 4.7 5.4 5.6 7.4 6.1 6.3 10.1 11.1 10.0 6.4 8.9 6.5 8.5 12.3 6.3 4.2 4.4 4.2 4.1
4.9 4.9 5.6 5.2 6.2 8.6 7.3 6.6 5.5 4.9 4.3 4.6 4.6 4.7 5.4 5.2 7.8 6.7 5.4 4.8 5.0 6.0 6.2 4.6 5.3 6.3 7.9 4.4 4.5 4.6
5.0 5.3 4.6 4.5 4.6 4.5 3.8 4.9 5.9 5.4 4.7 4.3 3.9 3.9 4.7 5.3 7.7 8.8 8.8 6.4 6.6 5.1 4.8 3.9 5.2 4.9 6.1 4.9 5.0 6.1 5.5 4.4
4.2 5.9 4.9 4.5 4.3 4.1 3.8 4.3 4.6 3.9 4.6 4.6 3.9 4.9 5.4 5.0 7.7 8.5 10.5 7.0 6.3 5.5 8.5 7.9 5.8 6.4 7.1 7.2 9.3 5.8 4.3
3.9 4.7 4.5 4.2 4.7 4.5 4.1 4.0 4.2 3.8 4.2 5.2 4.7 4.9 6.1 6.3 6.1 8.3 9.4 8.6 10.3 7.5 8.4 9.0 9.3 9.1 7.8 9.1 9.8 10.7 4.5
4.3 3.6 4.6 4.2 4.1 4.1 4.7 4.5 4.1 4.4 4.6 4.5 4.4 5.4 6.2 8.0 10.0 11.2 11.3 12.2 11.3 10.2 9.3 9.3 10.8 10.5 10.3 9.7 10.5 11.1 4.0
7.6 7.7 8.1 7.9 8.3 8.7 8.0 7.8 8.4 8.7 8.5 9.9 8.9 9.7
7.5 5.5 8.2 11.9 10.7

Figure 20. SATOB 101 - 400 hPa mean daily count. FEBRUARY 2005
Global average number of observations in 24 hours = 198572



		1	3	5	4	1			0		1	1				3	4	3	2			0	2	1	1										
15	47	62	96	112	67	93	118	71	33	45	76	114	76	109	178	189	150	143	118	128	165	134	148	128	91	26	4	0				0	0	0	0
201	241	231	278	336	268	307	291	340	217	181	294	235	546	824	325	140	85	88	279	574	564	349	245	218	299	291	206	117	13	9	4	6	10	21	52
366	510	273	380	419	411	712	706	885	466	405	606	494	1042	1076	607	332	221	215	431	581	548	568	328	495	629	809	843	686	369	82	47	55	69	88	233
55	130	310	462	459	471	962	1590	1154	657	324	251	438	1046	980	597	503	543	678	956	938	876	875	688	444	388	298	303	326	366	51	45	37	24	18	32
190	170	477	580	558	589	849	1199	294	89	21	84	419	645	874	1013	1009	1097	1295	1645	1291	750	428	275	206	268	320	297	318	260	56	17	10	12	10	28
610	562	402	230	129	173	235	252	106	98	376	768	1160	1303	1410	1050	1100	1181	1666	2748	2834	1813	779	607	484	740	924	965	586	644	181	39	50	53	42	30
760	971	936	375	152	34	8	15	11	59	494	731	1474	1773	1658	793	715	547	1533	2207	2310	2011	1110	1249	1140	1311	1080	1103	980	769	213	15	11	7	17	26
531	786	916	1036	636	398	168	24	23	33	440	485	1275	1448	1695	681	325	254	801	1865	2045	1880	2129	1959	1370	1357	1237	889	529	559	81	24	33	24	34	77
142	249	435	515	720	597	514	258	183	121	220	362	643	902	1571	1598	396	260	189	634	1402	1085	888	1191	875	933	854	702	387	270	19	17	22	35	55	110
221	209	157	194	239	498	879	359	297	216	108	183	314	784	1008	1356	969	595	532	713	1019	1305	1059	845	977	898	687	523	437	232	65	51	37	54	63	186
108	70	52	44	31	88	222	206	190	119	81	114	133	297	501	556	604	598	501	523	784	838	742	566	567	576	495	379	261	23	34	63	56	79	67	90
													0	74	211	217	192	192	183	200	239	222	305	317	263	219	111	1							
																1	1	1	1			1	3	2	2										

Figure 21. SATOB 101 - 400 hPa vector mean wind. FEBRUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

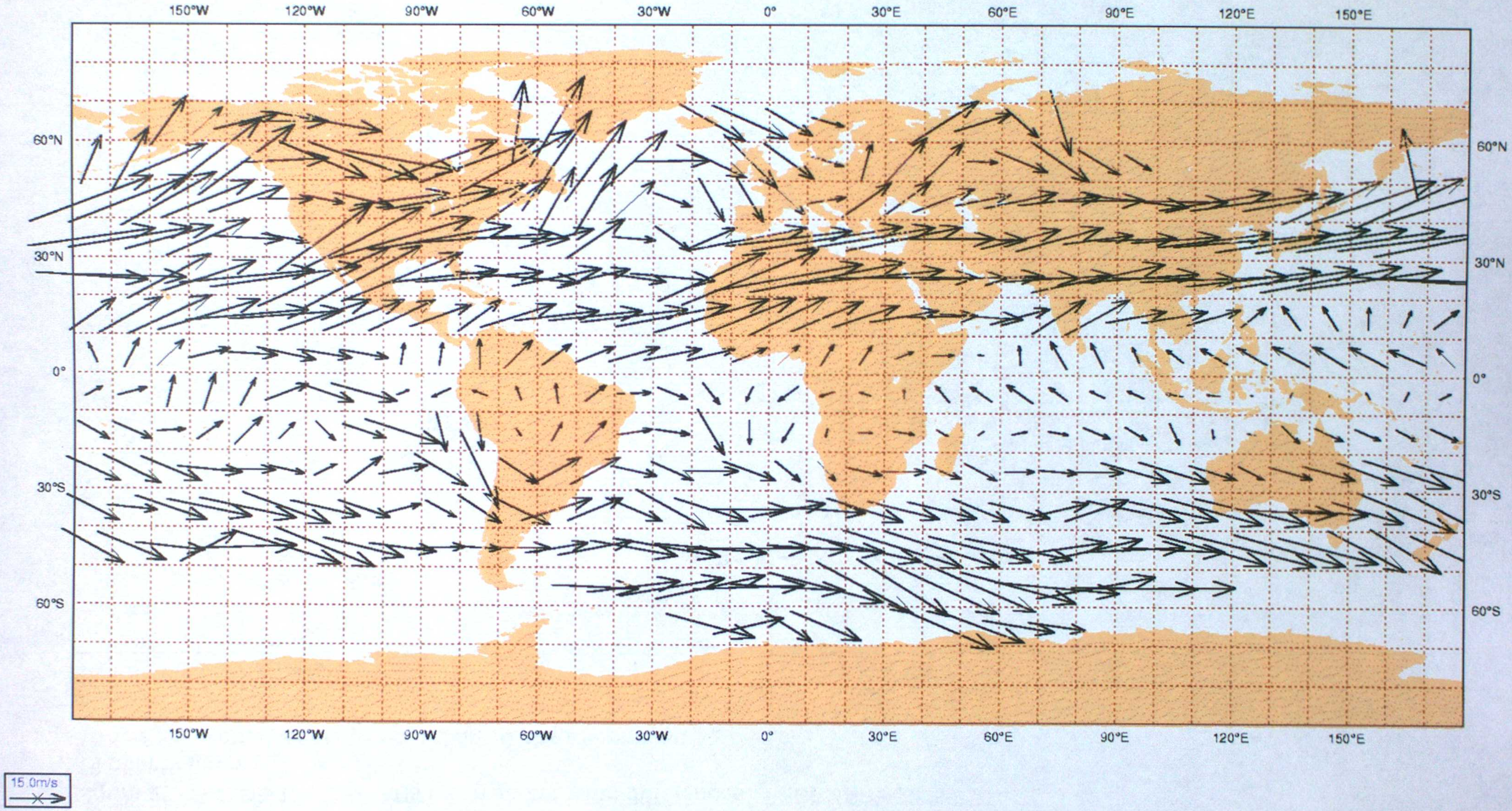

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 22. SATOB 101 - 400 hPa mean vector wind differences. FEBRUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

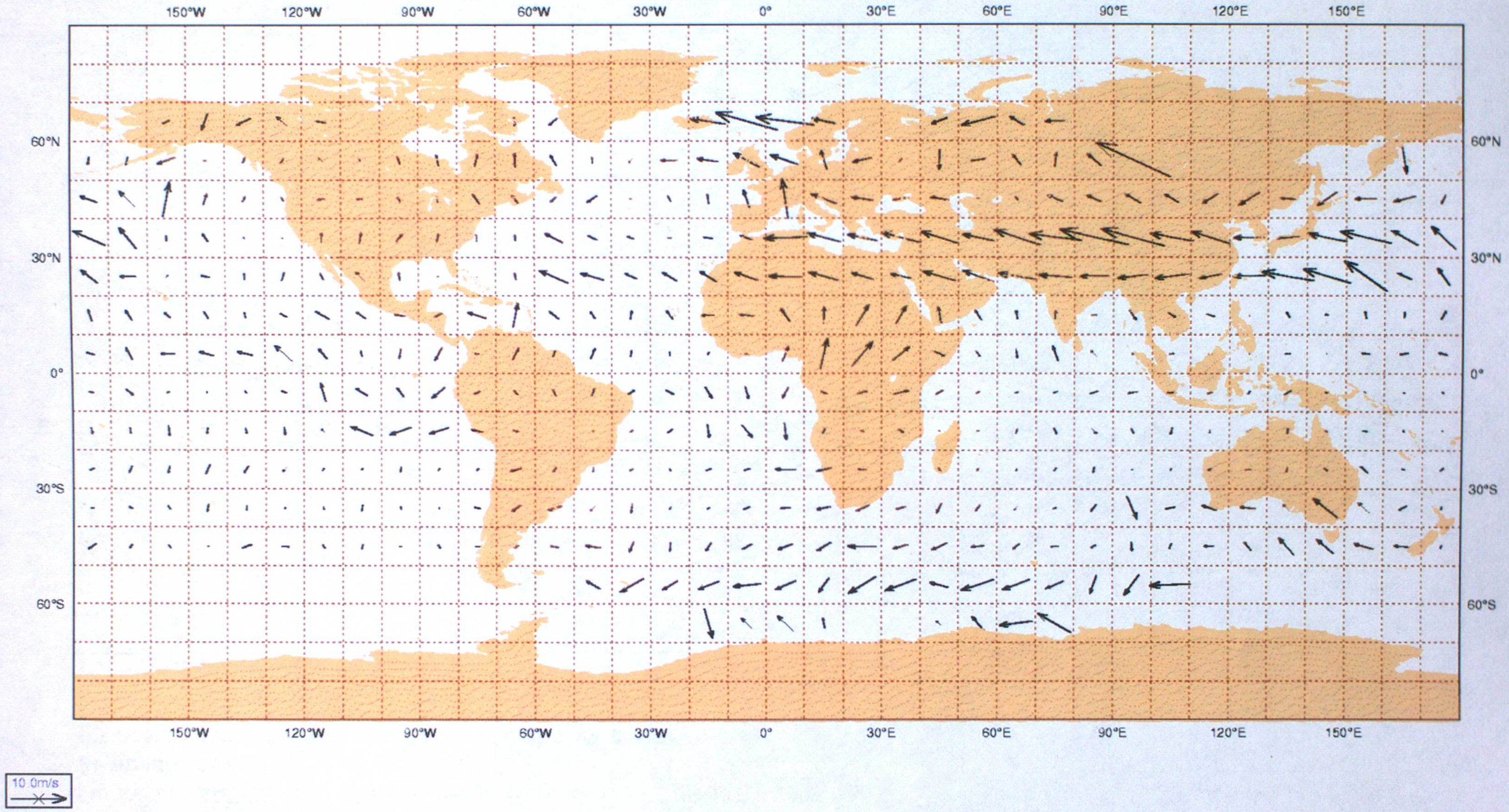

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). FEBRUARY 2005
All observations
Values are plotted where greater than 10 obs are present

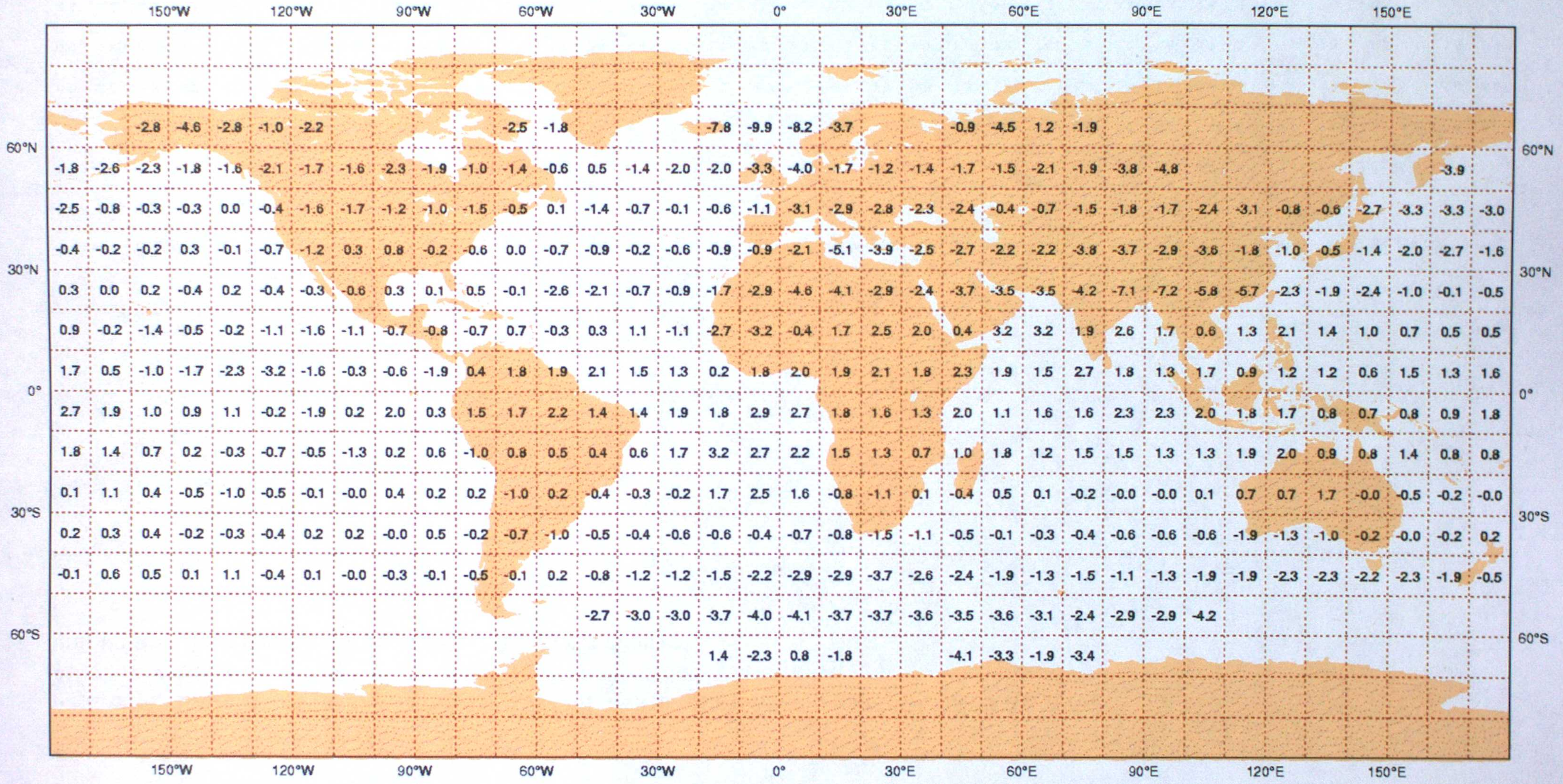
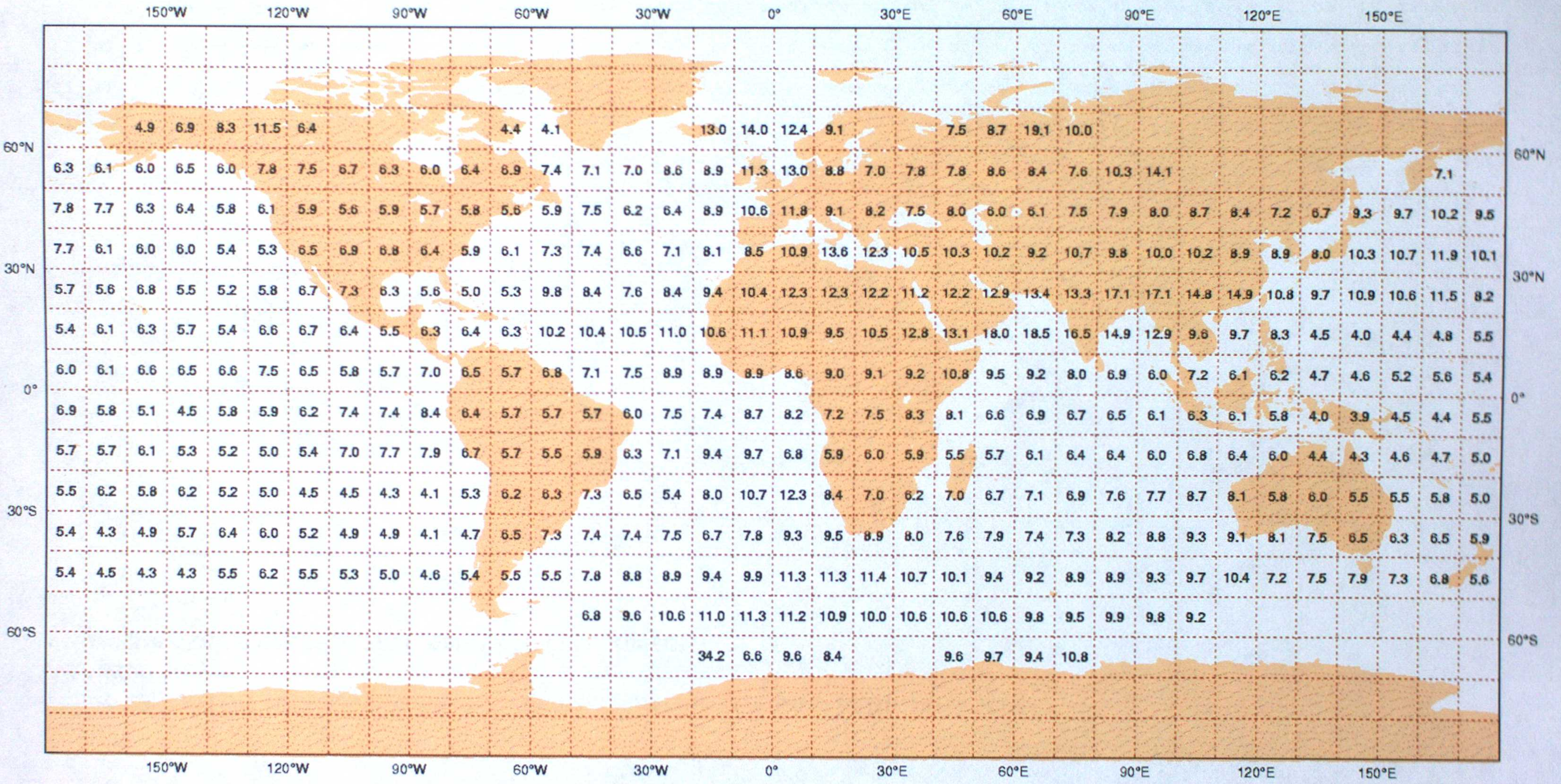

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-2.8 -4.6 -2.8 -1.0 -2.2 -2.5 -1.8 -7.8 -9.9 -8.2 -3.7 -0.9 -4.5 1.2 -1.9
-1.8 -2.6 -2.3 -1.8 -1.6 -2.1 -1.7 -1.6 -2.3 -1.9 -1.0 -1.4 -0.6 0.5 -1.4 -2.0 -2.0 -3.3 -4.0 -1.7 -1.2 -1.4 -1.7 -1.5 -2.1 -1.9 -3.8 -4.8 -3.9
-2.5 -0.8 -0.3 -0.3 0.0 -0.4 -1.6 -1.7 -1.2 -1.0 -1.5 -0.5 0.1 -1.4 -0.7 -0.1 -0.6 -1.1 -3.1 -2.9 -2.8 -2.3 -2.4 -0.4 -0.7 -1.5 -1.8 -1.7 -2.4 -3.1 -0.8 -0.6 -2.7 -3.3 -3.3 -3.0
-0.4 -0.2 -0.2 0.3 -0.1 -0.7 -1.2 0.3 0.8 -0.2 -0.6 0.0 -0.7 -0.9 -0.2 -0.6 -0.9 -0.9 -2.1 -5.1 -3.9 -2.5 -2.7 -2.2 -2.2 -3.8 -3.7 -2.9 -3.6 -1.8 -1.0 -0.5 -1.4 -2.0 -2.7 -1.6
0.3 0.0 0.2 -0.4 0.2 -0.4 -0.3 -0.6 0.3 0.1 0.5 -0.1 -2.6 -2.1 -0.7 -0.9 -1.7 -2.9 -4.6 -4.1 -2.9 -2.4 -3.7 -3.5 -3.5 -4.2 -7.1 -7.2 -5.8 -5.7 -2.3 -1.9 -2.4 -1.0 -0.1 -0.5
0.9 -0.2 -1.4 -0.5 -0.2 -1.1 -1.6 -1.1 -0.7 -0.8 -0.7 0.7 -0.3 0.3 1.1 -1.1 -2.7 -3.2 -0.4 1.7 2.5 2.0 0.4 3.2 3.2 1.9 2.6 1.7 0.6 1.3 2.1 1.4 1.0 0.7 0.5 0.5
1.7 0.5 -1.0 -1.7 -2.3 -3.2 -1.6 -0.3 -0.6 -1.9 0.4 1.8 1.9 2.1 1.5 1.3 0.2 1.8 2.0 1.9 2.1 1.8 2.3 1.9 1.5 2.7 1.8 1.3 1.7 0.9 1.2 1.2 0.6 1.5 1.3 1.6
2.7 1.9 1.0 0.9 1.1 -0.2 -1.9 0.2 2.0 0.3 1.5 1.7 2.2 1.4 1.4 1.9 1.8 2.9 2.7 1.8 1.6 1.3 2.0 1.1 1.6 1.6 2.3 2.3 2.0 1.8 1.7 0.8 0.7 0.8 0.9 1.8
1.8 1.4 0.7 0.2 -0.3 -0.7 -0.5 -1.3 0.2 0.6 -1.0 0.8 0.5 0.4 0.6 1.7 3.2 2.7 2.2 1.5 1.3 0.7 1.0 1.8 1.2 1.5 1.5 1.3 1.3 1.9 2.0 0.9 0.8 1.4 0.8 0.8
0.1 1.1 0.4 -0.5 -1.0 -0.5 -0.1 -0.0 0.4 0.2 0.2 -1.0 0.2 -0.4 -0.3 -0.2 1.7 2.5 1.6 -0.8 -1.1 0.1 -0.4 0.5 0.1 -0.2 -0.0 -0.0 0.1 0.7 0.7 1.7 -0.0 -0.5 -0.2 -0.0
0.2 0.3 0.4 -0.2 -0.3 -0.4 0.2 0.2 -0.0 0.5 -0.2 -0.7 -1.0 -0.5 -0.4 -0.6 -0.6 -0.4 -0.7 -0.8 -1.5 -1.1 -0.5 -0.1 -0.3 -0.4 -0.6 -0.6 -0.6 -1.9 -1.3 -1.0 -0.2 -0.0 -0.2 0.2
-0.1 0.6 0.5 0.1 1.1 -0.4 0.1 -0.0 -0.3 -0.1 -0.5 -0.1 0.2 -0.8 -1.2 -1.2 -1.5 -2.2 -2.9 -2.9 -3.7 -2.6 -2.4 -1.9 -1.3 -1.5 -1.1 -1.3 -1.9 -1.9 -2.3 -2.3 -2.2 -2.3 -1.9 -0.5
-2.7 -3.0 -3.0 -3.7 -4.0 -4.1 -3.7 -3.7 -3.6 -3.5 -3.6 -3.1 -2.4 -2.9 -2.9 -4.2
1.4 -2.3 0.8 -1.8 -4.1 -3.3 -1.9 -3.4

Figure 24. SATOB 101 - 400 hPa mean RMS O-B vector differences (ms-1). FEBRUARY 2005
All observations
Values are plotted where greater than 10 obs are present


150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
4.9 6.9 8.3 11.5 6.4 4.4 4.1 13.0 14.0 12.4 9.1 7.5 8.7 19.1 10.0
6.3 6.1 6.0 6.5 6.0 7.8 7.5 6.7 6.3 6.0 6.4 6.9 7.4 7.1 7.0 8.6 8.9 11.3 13.0 8.8 7.0 7.8 7.8 8.6 8.4 7.6 10.3 14.1 7.1
7.8 7.7 6.3 6.4 5.8 6.1 5.9 5.6 5.9 5.7 5.8 5.6 5.9 7.5 6.2 6.4 8.9 10.6 11.8 9.1 8.2 7.5 8.0 6.0 6.1 7.5 7.9 8.0 8.7 8.4 7.2 6.7 9.3 9.7 10.2 9.5
7.7 6.1 6.0 6.0 5.4 5.3 6.5 6.9 6.8 6.4 5.9 6.1 7.3 7.4 6.6 7.1 8.1 8.5 10.9 13.6 12.3 10.5 10.3 10.2 9.2 10.7 9.8 10.0 10.2 8.9 8.9 8.0 10.3 10.7 11.9 10.1
5.7 5.6 6.8 5.5 5.2 5.8 6.7 7.3 6.3 5.6 5.0 5.3 9.8 8.4 7.6 8.4 9.4 10.4 12.3 12.3 12.2 11.2 12.2 12.9 13.4 13.3 17.1 17.1 14.8 14.9 10.8 9.7 10.9 10.6 11.5 8.2
5.4 6.1 6.3 5.7 5.4 6.6 6.7 6.4 5.5 6.3 6.4 6.3 10.2 10.4 10.5 11.0 10.6 11.1 10.9 9.5 10.5 12.8 13.1 18.0 18.5 16.5 14.9 12.9 9.6 9.7 8.3 4.5 4.0 4.4 4.8 5.5
6.0 6.1 6.6 6.5 6.6 7.5 6.5 5.8 5.7 7.0 6.5 5.7 6.8 7.1 7.5 8.9 8.9 8.9 8.6 9.0 9.1 9.2 10.8 9.5 9.2 8.0 6.9 6.0 7.2 6.1 6.2 4.7 4.6 5.2 5.6 5.4
6.9 5.8 5.1 4.5 5.8 5.9 6.2 7.4 7.4 8.4 6.4 5.7 5.7 5.7 6.0 7.5 7.4 8.7 8.2 7.2 7.5 8.3 8.1 6.6 6.9 6.7 6.5 6.1 6.3 6.1 5.8 4.0 3.9 4.5 4.4 5.5
5.7 5.7 6.1 5.3 5.2 5.0 5.4 7.0 7.7 7.9 6.7 5.7 5.5 5.9 6.3 7.1 9.4 9.7 6.8 5.9 6.0 5.9 5.5 5.7 6.1 6.4 6.4 6.0 6.8 6.4 6.0 4.4 4.3 4.6 4.7 5.0
5.5 6.2 5.8 6.2 5.2 5.0 4.5 4.5 4.3 4.1 5.3 6.2 6.3 7.3 6.5 5.4 8.0 10.7 12.3 8.4 7.0 6.2 7.0 6.7 7.1 6.9 7.6 7.7 8.7 8.1 5.8 6.0 5.5 5.5 5.8 5.0
5.4 4.3 4.9 5.7 6.4 6.0 5.2 4.9 4.9 4.1 4.7 6.5 7.3 7.4 7.4 7.5 6.7 7.8 9.3 9.5 8.9 8.0 7.6 7.9 7.4 7.3 8.2 8.8 9.3 9.1 8.1 7.5 6.5 6.3 6.5 5.9
5.4 4.5 4.3 4.3 5.5 6.2 5.5 5.3 5.0 4.6 5.4 5.5 5.5 7.8 8.8 8.9 9.4 9.9 11.3 11.3 11.4 10.7 10.1 9.4 9.2 8.9 8.9 9.3 9.7 10.4 7.2 7.5 7.9 7.3 6.8 5.6
6.8 9.6 10.6 11.0 11.3 11.2 10.9 10.0 10.6 10.6 10.6 9.8 9.5 9.9 9.8 9.2
34.2 6.6 9.6 8.4 9.6 9.7 9.4 10.8
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: EXETER

MONTH: Feb 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15, NOAA-16 and NOAA-17.

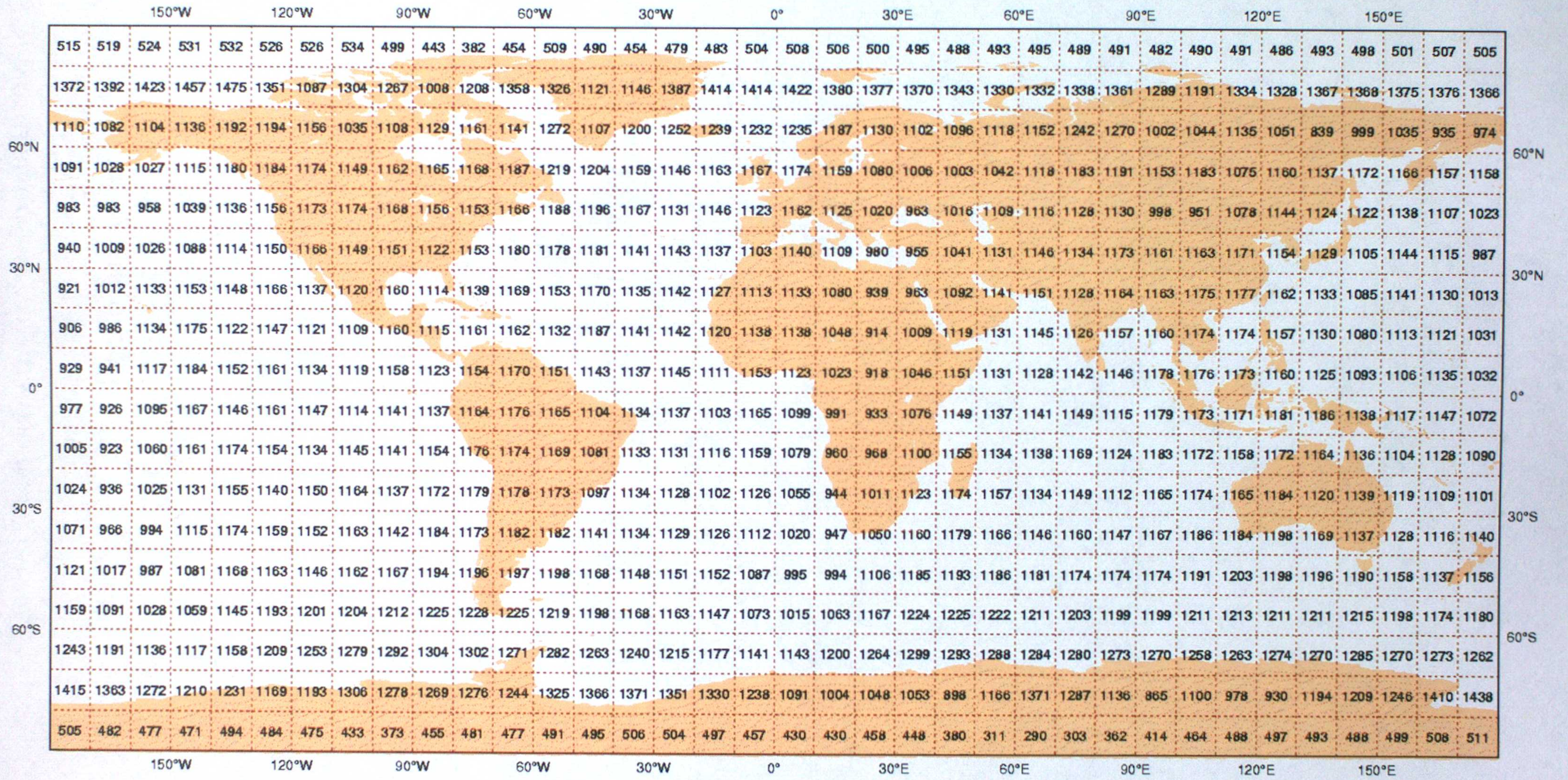
Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)
HIRS8 (Surface)
HIRS15 (700)
HIRS11 (500-700)
HIRS4 (400)
AMSUA5 (700)
AMSUA7 (300)
AMSUA9 (100)

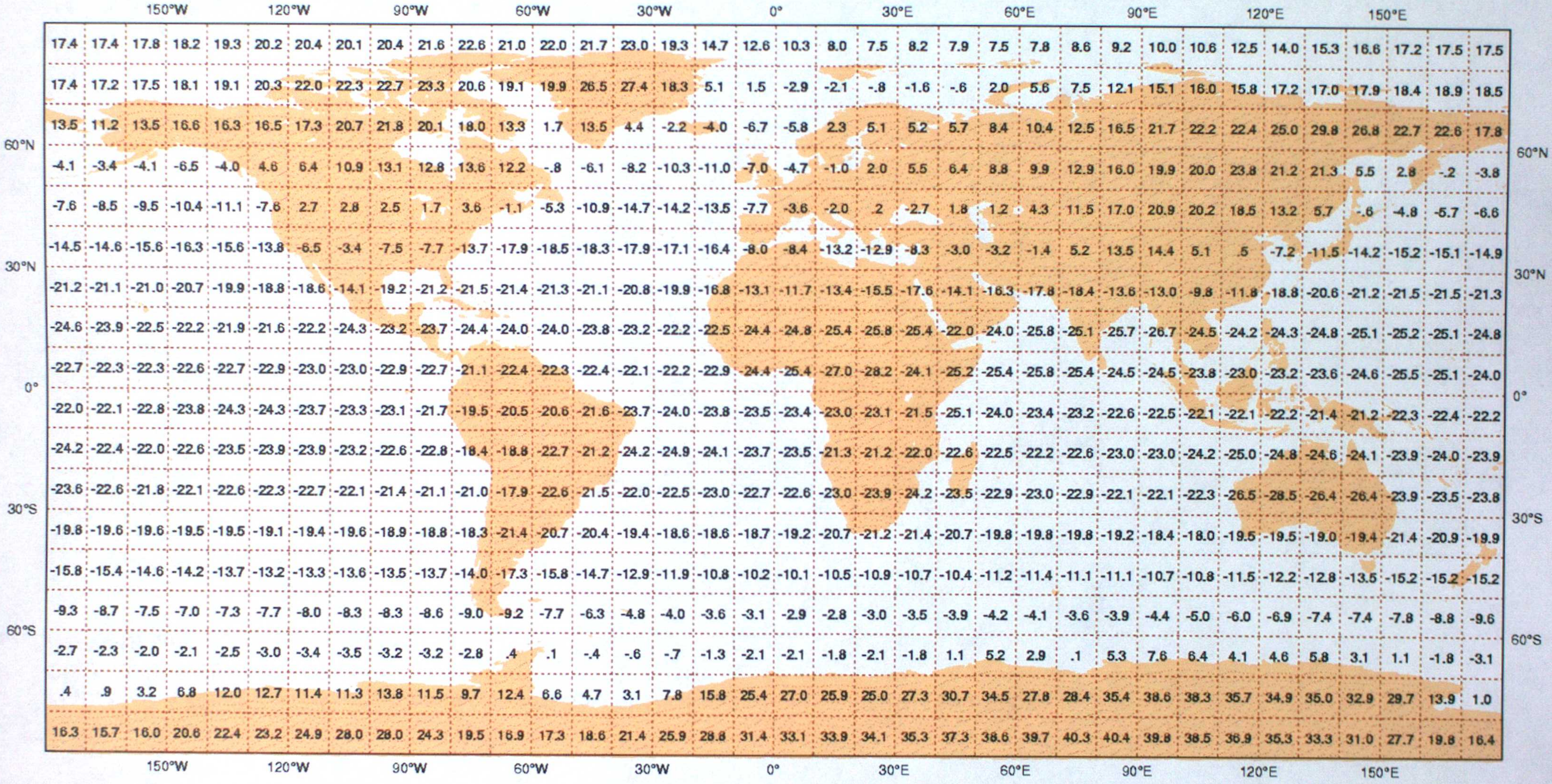
:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. FEBRUARY 2005
NOAA15, using all observations
Global average number of observations in 24 hours = 697113



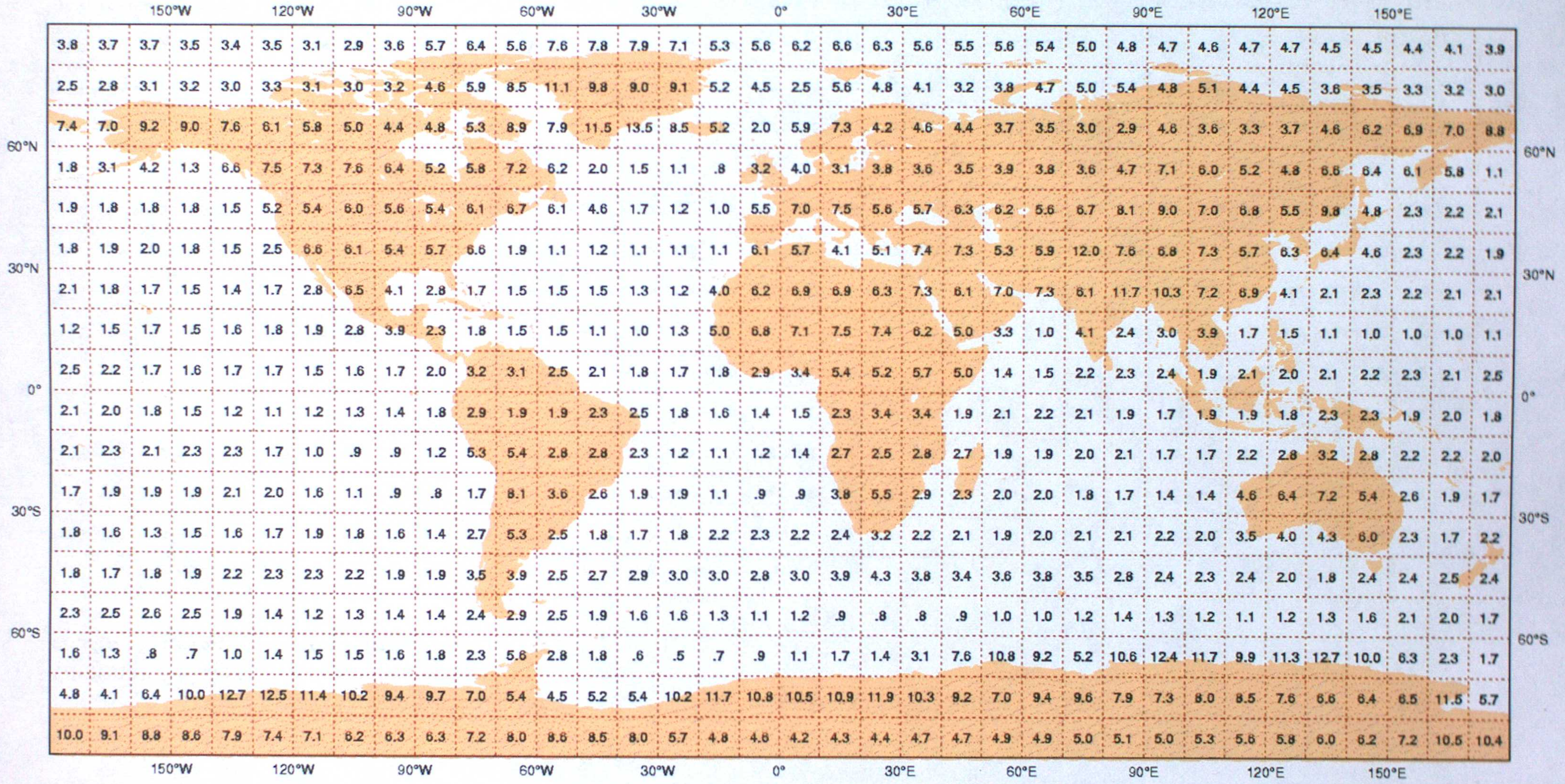
515	519	524	531	532	526	526	534	499	443	382	454	509	490	454	479	483	504	508	506	500	495	488	493	495	489	491	482	490	491	486	493	498	501	507	505
1372	1392	1423	1457	1475	1351	1087	1304	1267	1008	1208	1358	1326	1121	1146	1387	1414	1414	1422	1380	1377	1370	1343	1330	1332	1338	1361	1289	1191	1334	1328	1367	1368	1375	1376	1366
1110	1082	1104	1136	1192	1194	1156	1035	1108	1129	1161	1141	1272	1107	1200	1252	1239	1232	1235	1187	1130	1102	1096	1118	1152	1242	1270	1002	1044	1135	1051	839	999	1035	935	974
1091	1028	1027	1115	1180	1184	1174	1149	1162	1165	1168	1187	1219	1204	1159	1146	1163	1167	1174	1159	1080	1006	1003	1042	1118	1183	1191	1153	1183	1075	1160	1137	1172	1166	1157	1158
983	983	958	1039	1136	1156	1173	1174	1168	1156	1153	1166	1188	1196	1167	1131	1146	1123	1162	1125	1020	963	1016	1109	1116	1128	1130	998	951	1078	1144	1124	1122	1138	1107	1023
940	1009	1026	1088	1114	1150	1166	1149	1151	1122	1153	1180	1178	1181	1141	1143	1137	1103	1140	1109	980	955	1041	1131	1146	1134	1173	1161	1163	1171	1154	1129	1105	1144	1115	987
921	1012	1133	1153	1148	1166	1137	1120	1160	1114	1139	1169	1153	1170	1135	1142	1127	1113	1133	1080	939	963	1092	1141	1151	1128	1164	1163	1175	1177	1162	1133	1085	1141	1130	1013
906	986	1134	1175	1122	1147	1121	1109	1160	1115	1161	1162	1132	1187	1141	1142	1120	1138	1138	1048	914	1009	1119	1131	1145	1126	1157	1160	1174	1174	1157	1130	1080	1113	1121	1031
929	941	1117	1184	1152	1161	1134	1119	1158	1123	1154	1170	1151	1143	1137	1145	1111	1153	1123	1023	918	1046	1151	1131	1128	1142	1146	1178	1176	1173	1160	1125	1093	1106	1135	1032
977	926	1095	1167	1146	1161	1147	1114	1141	1137	1164	1176	1165	1104	1134	1137	1103	1165	1099	991	933	1076	1149	1137	1141	1149	1115	1179	1173	1171	1181	1186	1138	1117	1147	1072
1005	923	1060	1161	1174	1154	1134	1145	1141	1154	1176	1174	1169	1081	1133	1131	1116	1159	1079	960	968	1100	1155	1134	1138	1169	1124	1183	1172	1158	1172	1164	1136	1104	1128	1090
1024	936	1025	1131	1155	1140	1150	1164	1137	1172	1179	1178	1173	1097	1134	1128	1102	1126	1055	944	1011	1123	1174	1157	1134	1149	1112	1165	1174	1165	1184	1120	1139	1119	1109	1101
1071	966	994	1115	1174	1159	1152	1163	1142	1184	1173	1182	1182	1141	1134	1129	1126	1112	1020	947	1050	1160	1179	1166	1146	1160	1147	1167	1186	1184	1198	1169	1137	1128	1116	1140
1121	1017	987	1081	1168	1163	1146	1162	1167	1194	1196	1197	1198	1168	1148	1151	1152	1087	995	994	1106	1185	1193	1186	1181	1174	1174	1174	1191	1203	1198	1196	1190	1158	1137	1156
1159	1091	1028	1059	1145	1193	1201	1204	1212	1225	1228	1225	1219	1198	1168	1163	1147	1073	1015	1063	1167	1224	1225	1222	1211	1203	1199	1199	1211	1213	1211	1211	1215	1198	1174	1180
1243	1191	1136	1117	1158	1209	1253	1279	1292	1304	1302	1271	1282	1263	1240	1215	1177	1141	1143	1200	1264	1299	1293	1288	1284	1280	1273	1270	1258	1263	1274	1270	1285	1270	1273	1262
1415	1363	1272	1210	1231	1169	1193	1306	1278	1269	1276	1244	1325	1366	1371	1351	1330	1238	1091	1004	1048	1053	898	1166	1371	1287	1136	865	1100	978	930	1194	1209	1246	1410	1438
505	482	477	471	494	484	475	433	373	455	481	477	491	495	506	504	497	457	430	430	458	448	380	311	290	303	362	414	464	488	497	493	488	499	508	511

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS8 (Surface)
NOAA15, using all observations



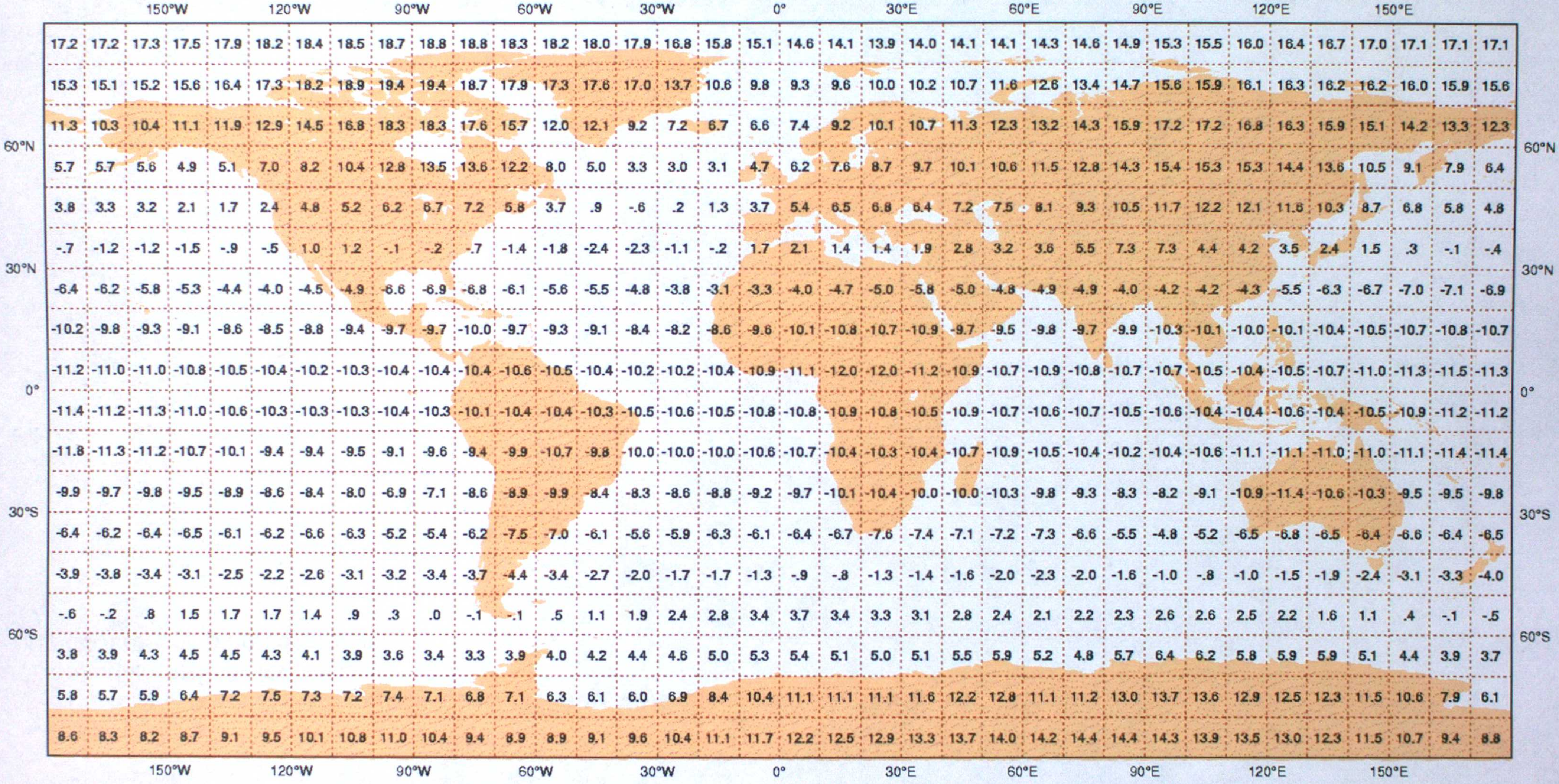
17.4	17.4	17.8	18.2	19.3	20.2	20.4	20.1	20.4	21.6	22.6	21.0	22.0	21.7	23.0	19.3	14.7	12.6	10.3	8.0	7.5	8.2	7.9	7.5	7.8	8.6	9.2	10.0	10.6	12.5	14.0	15.3	16.6	17.2	17.5	17.5
17.4	17.2	17.5	18.1	19.1	20.3	22.0	22.3	22.7	23.3	20.6	19.1	19.9	26.5	27.4	18.3	5.1	1.5	-2.9	-2.1	-.8	-1.6	-.6	2.0	5.6	7.5	12.1	15.1	16.0	15.8	17.2	17.0	17.9	18.4	18.9	18.5
13.5	11.2	13.5	16.6	16.3	16.5	17.3	20.7	21.8	20.1	18.0	13.3	1.7	13.5	4.4	-2.2	-4.0	-6.7	-5.8	2.3	5.1	5.2	5.7	8.4	10.4	12.5	16.5	21.7	22.2	22.4	25.0	29.8	26.8	22.7	22.6	17.8
-4.1	-3.4	-4.1	-6.5	-4.0	4.6	6.4	10.9	13.1	12.8	13.6	12.2	-.8	-6.1	-8.2	-10.3	-11.0	-7.0	-4.7	-1.0	2.0	5.5	6.4	8.8	9.9	12.9	16.0	19.9	20.0	23.8	21.2	21.3	5.5	2.8	-.2	-3.8
-7.6	-8.5	-9.5	-10.4	-11.1	-7.6	2.7	2.8	2.5	1.7	3.6	-1.1	-5.3	-10.9	-14.7	-14.2	-13.5	-7.7	-3.6	-2.0	.2	-2.7	1.8	1.2	4.3	11.5	17.0	20.9	20.2	18.5	13.2	5.7	-.6	-4.8	-5.7	-6.6
-14.5	-14.6	-15.6	-16.3	-15.6	-13.8	-6.5	-3.4	-7.5	-7.7	-13.7	-17.9	-18.5	-18.3	-17.9	-17.1	-16.4	-8.0	-8.4	-13.2	-12.9	-8.3	-3.0	-3.2	-1.4	5.2	13.5	14.4	5.1	.5	-7.2	-11.5	-14.2	-15.2	-15.1	-14.9
-21.2	-21.1	-21.0	-20.7	-19.9	-18.8	-18.6	-14.1	-19.2	-21.2	-21.5	-21.4	-21.3	-21.1	-20.8	-19.9	-16.8	-13.1	-11.7	-13.4	-15.5	-17.6	-14.1	-16.3	-17.8	-18.4	-13.6	-13.0	-9.8	-11.8	-18.8	-20.6	-21.2	-21.5	-21.5	-21.3
-24.6	-23.9	-22.5	-22.2	-21.9	-21.6	-22.2	-24.3	-23.2	-23.7	-24.4	-24.0	-24.0	-23.8	-23.2	-22.2	-22.5	-24.4	-24.8	-25.4	-25.8	-25.4	-22.0	-24.0	-25.8	-25.1	-25.7	-26.7	-24.5	-24.2	-24.3	-24.8	-25.1	-25.2	-25.1	-24.8
-22.7	-22.3	-22.3	-22.6	-22.7	-22.9	-23.0	-23.0	-22.9	-22.7	-21.1	-22.4	-22.3	-22.4	-22.1	-22.2	-22.9	-24.4	-25.4	-27.0	-28.2	-24.1	-25.2	-25.4	-25.8	-25.4	-24.5	-24.5	-23.8	-23.0	-23.2	-23.6	-24.6	-25.5	-25.1	-24.0
-22.0	-22.1	-22.8	-23.8	-24.3	-24.3	-23.7	-23.3	-23.1	-21.7	-19.5	-20.5	-20.6	-21.6	-23.7	-24.0	-23.8	-23.5	-23.4	-23.0	-23.1	-21.5	-25.1	-24.0	-23.4	-23.2	-22.6	-22.5	-22.1	-22.1	-22.2	-21.4	-21.2	-22.3	-22.4	-22.2
-24.2	-22.4	-22.0	-22.6	-23.5	-23.9	-23.9	-23.2	-22.6	-22.8	-18.4	-18.8	-22.7	-21.2	-24.2	-24.9	-24.1	-23.7	-23.5	-21.3	-21.2	-22.0	-22.6	-22.5	-22.2	-22.6	-23.0	-23.0	-24.2	-25.0	-24.8	-24.6	-24.1	-23.9	-24.0	-23.9
-23.6	-22.6	-21.8	-22.1	-22.6	-22.3	-22.7	-22.1	-21.4	-21.1	-21.0	-17.9	-22.6	-21.5	-22.0	-22.5	-23.0	-22.7	-22.6	-23.0	-23.9	-24.2	-23.5	-22.9	-23.0	-22.9	-22.1	-22.1	-22.3	-26.5	-28.5	-26.4	-26.4	-23.9	-23.5	-23.8
-19.8	-19.6	-19.6	-19.5	-19.5	-19.1	-19.4	-19.6	-18.9	-18.8	-18.3	-21.4	-20.7	-20.4	-19.4	-18.6	-18.6	-18.7	-19.2	-20.7	-21.2	-21.4	-20.7	-19.8	-19.8	-19.8	-19.2	-18.4	-18.0	-19.5	-19.5	-19.0	-19.4	-21.4	-20.9	-19.9
-15.8	-15.4	-14.6	-14.2	-13.7	-13.2	-13.3	-13.6	-13.5	-13.7	-14.0	-17.3	-15.8	-14.7	-12.9	-11.9	-10.8	-10.2	-10.1	-10.5	-10.9	-10.7	-10.4	-11.2	-11.4	-11.1	-11.1	-10.7	-10.8	-11.5	-12.2	-12.8	-13.5	-15.2	-15.2	-15.2
-9.3	-8.7	-7.5	-7.0	-7.3	-7.7	-8.0	-8.3	-8.3	-8.6	-9.0	-9.2	-7.7	-6.3	-4.8	-4.0	-3.6	-3.1	-2.9	-2.8	-3.0	-3.5	-3.9	-4.2	-4.1	-3.6	-3.9	-4.4	-5.0	-6.0	-6.9	-7.4	-7.4	-7.8	-8.8	-9.6
-2.7	-2.3	-2.0	-2.1	-2.5	-3.0	-3.4	-3.5	-3.2	-3.2	-2.8	.4	.1	-.4	-.6	-.7	-1.3	-2.1	-2.1	-1.8	-2.1	-1.8	1.1	5.2	2.9	.1	5.3	7.6	6.4	4.1	4.6	5.8	3.1	1.1	-1.8	-3.1
.4	.9	3.2	6.8	12.0	12.7	11.4	11.3	13.8	11.5	9.7	12.4	6.6	4.7	3.1	7.8	15.8	25.4	27.0	25.9	25.0	27.3	30.7	34.5	27.8	28.4	35.4	38.6	38.3	35.7	34.9	35.0	32.9	29.7	13.9	1.0
16.3	15.7	16.0	20.6	22.4	23.2	24.9	28.0	28.0	24.3	19.5	16.9	17.3	18.6	21.4	25.9	28.8	31.4	33.1	33.9	34.1	35.3	37.3	38.6	39.7	40.3	40.4	39.8	38.5	36.9	35.3	33.3	31.0	27.7	19.8	16.4

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS8 (Surface)
NOAA15, using all observations



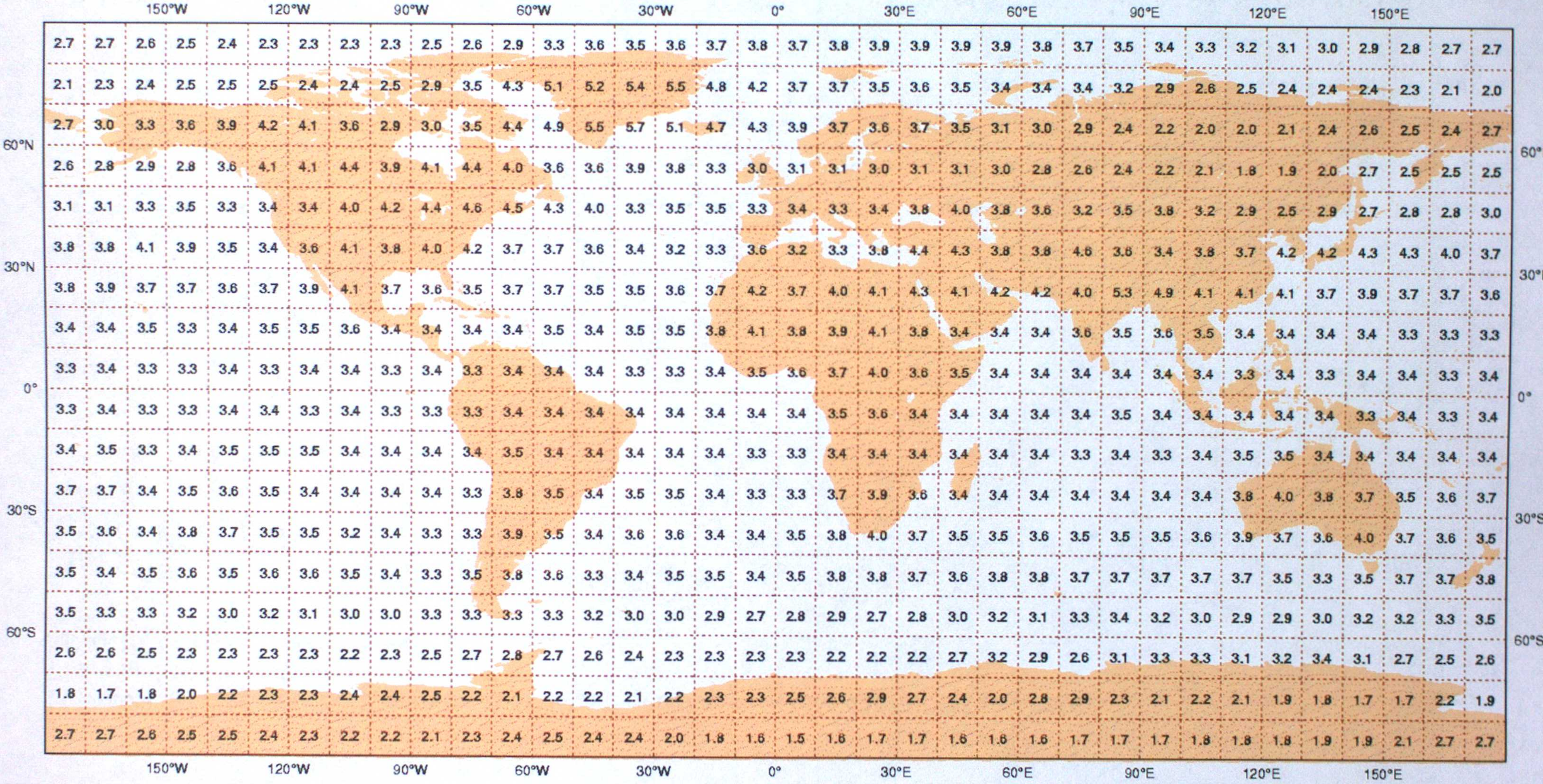
3.8	3.7	3.7	3.5	3.4	3.5	3.1	2.9	3.6	5.7	6.4	5.6	7.6	7.8	7.9	7.1	5.3	5.6	6.2	6.6	6.3	5.6	5.5	5.6	5.4	5.0	4.8	4.7	4.6	4.7	4.7	4.5	4.5	4.4	4.1	3.9
2.5	2.8	3.1	3.2	3.0	3.3	3.1	3.0	3.2	4.6	5.9	8.5	11.1	9.8	9.0	9.1	5.2	4.5	2.5	5.6	4.8	4.1	3.2	3.8	4.7	5.0	5.4	4.8	5.1	4.4	4.5	3.6	3.5	3.3	3.2	3.0
7.4	7.0	9.2	9.0	7.6	6.1	5.8	5.0	4.4	4.8	5.3	8.9	7.9	11.5	13.5	8.5	5.2	2.0	5.9	7.3	4.2	4.6	4.4	3.7	3.5	3.0	2.9	4.6	3.6	3.3	3.7	4.6	6.2	6.9	7.0	8.8
1.8	3.1	4.2	1.3	6.6	7.5	7.3	7.6	6.4	5.2	5.8	7.2	6.2	2.0	1.5	1.1	.8	3.2	4.0	3.1	3.8	3.6	3.5	3.9	3.8	3.6	4.7	7.1	6.0	5.2	4.8	6.6	6.4	6.1	5.8	1.1
1.9	1.8	1.8	1.8	1.5	5.2	5.4	6.0	5.6	5.4	6.1	6.7	6.1	4.6	1.7	1.2	1.0	5.5	7.0	7.5	5.6	5.7	6.3	6.2	5.6	6.7	8.1	9.0	7.0	6.8	5.5	9.8	4.8	2.3	2.2	2.1
1.8	1.9	2.0	1.8	1.5	2.5	6.6	6.1	5.4	5.7	6.6	1.9	1.1	1.2	1.1	1.1	1.1	6.1	5.7	4.1	5.1	7.4	7.3	5.3	5.9	12.0	7.6	6.8	7.3	5.7	6.3	6.4	4.6	2.3	2.2	1.9
2.1	1.8	1.7	1.5	1.4	1.7	2.8	6.5	4.1	2.8	1.7	1.5	1.5	1.5	1.3	1.2	4.0	6.2	6.9	6.9	6.3	7.3	6.1	7.0	7.3	6.1	11.7	10.3	7.2	6.9	4.1	2.1	2.3	2.2	2.1	2.1
1.2	1.5	1.7	1.5	1.6	1.8	1.9	2.8	3.9	2.3	1.8	1.5	1.5	1.1	1.0	1.3	5.0	6.8	7.1	7.5	7.4	6.2	5.0	3.3	1.0	4.1	2.4	3.0	3.9	1.7	1.5	1.1	1.0	1.0	1.0	1.1
2.5	2.2	1.7	1.6	1.7	1.7	1.5	1.6	1.7	2.0	3.2	3.1	2.5	2.1	1.8	1.7	1.8	2.9	3.4	5.4	5.2	5.7	5.0	1.4	1.5	2.2	2.3	2.4	1.9	2.1	2.0	2.1	2.2	2.3	2.1	2.5
2.1	2.0	1.8	1.5	1.2	1.1	1.2	1.3	1.4	1.8	2.9	1.9	1.9	2.3	2.5	1.8	1.6	1.4	1.5	2.3	3.4	3.4	1.9	2.1	2.2	2.1	1.9	1.7	1.9	1.9	1.8	2.3	2.3	1.9	2.0	1.8
2.1	2.3	2.1	2.3	2.3	1.7	1.0	.9	.9	1.2	5.3	5.4	2.8	2.8	2.3	1.2	1.1	1.2	1.4	2.7	2.5	2.8	2.7	1.9	1.9	2.0	2.1	1.7	1.7	2.2	2.8	3.2	2.8	2.2	2.2	2.0
1.7	1.9	1.9	1.9	2.1	2.0	1.6	1.1	.9	.8	1.7	8.1	3.6	2.6	1.9	1.9	1.1	.9	.9	3.8	5.5	2.9	2.3	2.0	2.0	1.8	1.7	1.4	1.4	4.6	6.4	7.2	5.4	2.6	1.9	1.7
1.8	1.6	1.3	1.5	1.6	1.7	1.9	1.8	1.6	1.4	2.7	5.3	2.5	1.8	1.7	1.8	2.2	2.3	2.2	2.4	3.2	2.2	2.1	1.9	2.0	2.1	2.1	2.2	2.0	3.5	4.0	4.3	6.0	2.3	1.7	2.2
1.8	1.7	1.8	1.9	2.2	2.3	2.3	2.2	1.9	1.9	3.5	3.9	2.5	2.7	2.9	3.0	3.0	2.8	3.0	3.9	4.3	3.8	3.4	3.6	3.8	3.5	2.8	2.4	2.3	2.4	2.0	1.8	2.4	2.4	2.5	2.4
2.3	2.5	2.6	2.5	1.9	1.4	1.2	1.3	1.4	1.4	2.4	2.9	2.5	1.9	1.6	1.6	1.3	1.1	1.2	.9	.8	.8	.9	1.0	1.0	1.2	1.4	1.3	1.2	1.1	1.2	1.3	1.6	2.1	2.0	1.7
1.6	1.3	.8	.7	1.0	1.4	1.5	1.5	1.6	1.8	2.3	5.6	2.8	1.8	.6	.5	.7	.9	1.1	1.7	1.4	3.1	7.6	10.8	9.2	5.2	10.6	12.4	11.7	9.9	11.3	12.7	10.0	6.3	2.3	1.7
4.8	4.1	6.4	10.0	12.7	12.5	11.4	10.2	9.4	9.7	7.0	5.4	4.5	5.2	5.4	10.2	11.7	10.8	10.5	10.9	11.9	10.3	9.2	7.0	9.4	9.6	7.9	7.3	8.0	8.5	7.6	6.6	6.4	6.5	11.5	5.7
10.0	9.1	8.8	8.6	7.9	7.4	7.1	6.2	6.3	6.3	7.2	8.0	8.6	8.5	8.0	5.7	4.8	4.6	4.2	4.3	4.4	4.7	4.7	4.9	4.9	5.0	5.1	5.0	5.3	5.6	5.8	6.0	6.2	7.2	10.5	10.4

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



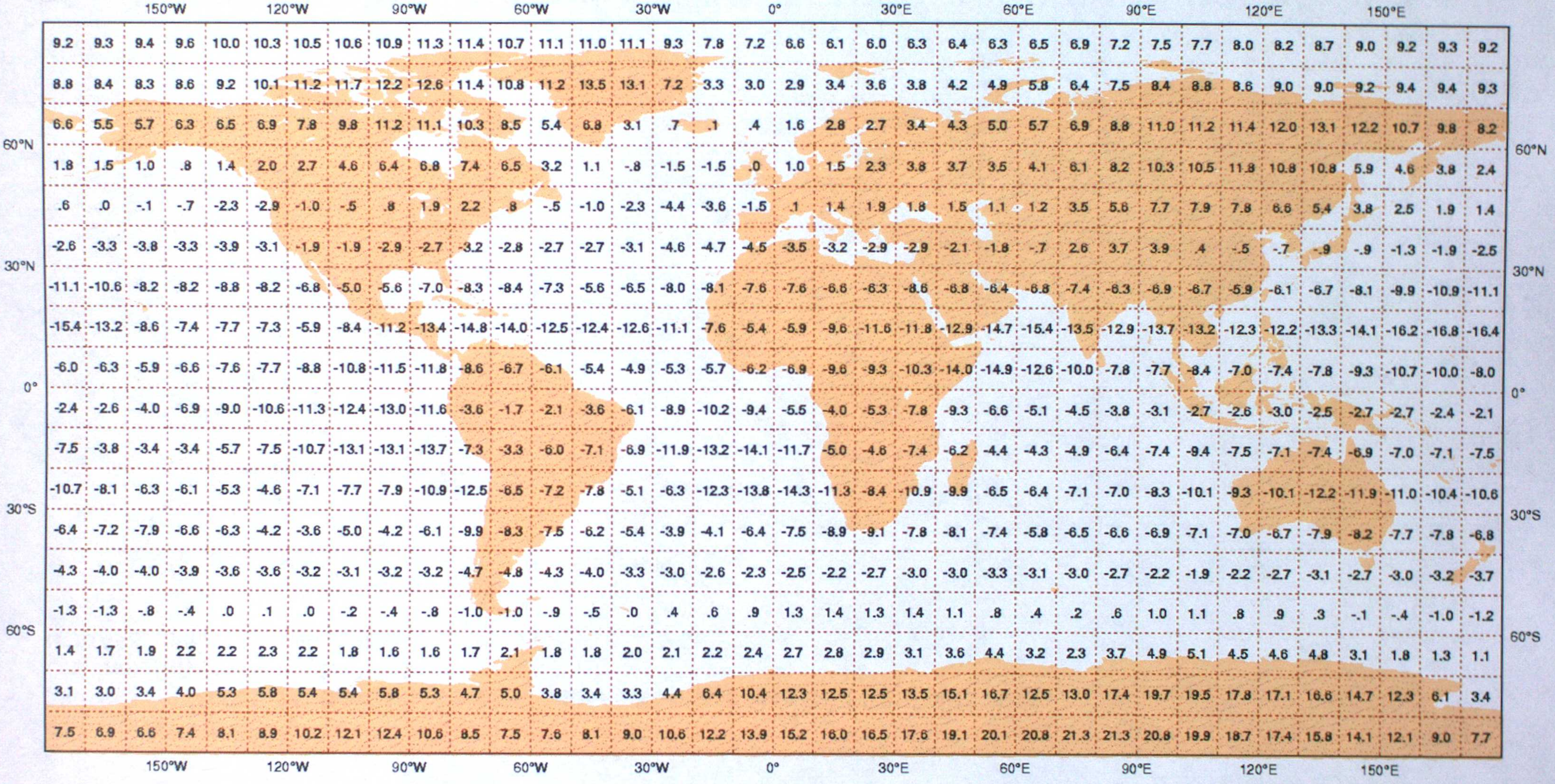
17.2	17.2	17.3	17.5	17.9	18.2	18.4	18.5	18.7	18.8	18.8	18.3	18.2	18.0	17.9	16.8	15.8	15.1	14.6	14.1	13.9	14.0	14.1	14.1	14.3	14.6	14.9	15.3	15.5	16.0	16.4	16.7	17.0	17.1	17.1	17.1
15.3	15.1	15.2	15.6	16.4	17.3	18.2	18.9	19.4	19.4	18.7	17.9	17.3	17.6	17.0	13.7	10.6	9.8	9.3	9.6	10.0	10.2	10.7	11.6	12.6	13.4	14.7	15.6	15.9	16.1	16.3	16.2	16.2	16.0	15.9	15.6
11.3	10.3	10.4	11.1	11.9	12.9	14.5	16.8	18.3	18.3	17.6	15.7	12.0	12.1	9.2	7.2	6.7	6.6	7.4	9.2	10.1	10.7	11.3	12.3	13.2	14.3	15.9	17.2	17.2	16.8	16.3	15.9	15.1	14.2	13.3	12.3
5.7	5.7	5.6	4.9	5.1	7.0	8.2	10.4	12.8	13.5	13.6	12.2	8.0	5.0	3.3	3.0	3.1	4.7	6.2	7.6	8.7	9.7	10.1	10.6	11.5	12.8	14.3	15.4	15.3	15.3	14.4	13.6	10.5	9.1	7.9	6.4
3.8	3.3	3.2	2.1	1.7	2.4	4.8	5.2	6.2	6.7	7.2	5.8	3.7	.9	-.6	.2	1.3	3.7	5.4	6.5	6.8	6.4	7.2	7.5	8.1	9.3	10.5	11.7	12.2	12.1	11.6	10.3	8.7	6.8	5.8	4.8
-.7	-1.2	-1.2	-1.5	-.9	-.5	1.0	1.2	-.1	-.2	-.7	-1.4	-1.8	-2.4	-2.3	-1.1	-.2	1.7	2.1	1.4	1.4	1.9	2.8	3.2	3.6	5.5	7.3	7.3	4.4	4.2	3.5	2.4	1.5	.3	-.1	-.4
-6.4	-6.2	-5.8	-5.3	-4.4	-4.0	-4.5	-4.9	-6.6	-6.9	-6.8	-6.1	-5.6	-5.5	-4.8	-3.8	-3.1	-3.3	-4.0	-4.7	-5.0	-5.8	-5.0	-4.8	-4.9	-4.9	-4.0	-4.2	-4.2	-4.3	-5.5	-6.3	-6.7	-7.0	-7.1	-6.9
-10.2	-9.8	-9.3	-9.1	-8.6	-8.5	-8.8	-9.4	-9.7	-9.7	-10.0	-9.7	-9.3	-9.1	-8.4	-8.2	-8.6	-9.6	-10.1	-10.8	-10.7	-10.9	-9.7	-9.5	-9.8	-9.7	-9.9	-10.3	-10.1	-10.0	-10.1	-10.4	-10.5	-10.7	-10.8	-10.7
-11.2	-11.0	-11.0	-10.8	-10.5	-10.4	-10.2	-10.3	-10.4	-10.4	-10.4	-10.6	-10.5	-10.4	-10.2	-10.2	-10.4	-10.9	-11.1	-12.0	-12.0	-11.2	-10.9	-10.7	-10.9	-10.8	-10.7	-10.7	-10.5	-10.4	-10.5	-10.7	-11.0	-11.3	-11.5	-11.3
-11.4	-11.2	-11.3	-11.0	-10.6	-10.3	-10.3	-10.3	-10.4	-10.3	-10.1	-10.4	-10.4	-10.3	-10.5	-10.6	-10.5	-10.8	-10.8	-10.9	-10.8	-10.5	-10.9	-10.7	-10.6	-10.7	-10.5	-10.6	-10.4	-10.4	-10.6	-10.4	-10.5	-10.9	-11.2	-11.2
-11.8	-11.3	-11.2	-10.7	-10.1	-9.4	-9.4	-9.5	-9.1	-9.6	-9.4	-9.9	-10.7	-9.8	-10.0	-10.0	-10.0	-10.6	-10.7	-10.4	-10.3	-10.4	-10.7	-10.9	-10.5	-10.4	-10.2	-10.4	-10.6	-11.1	-11.1	-11.0	-11.0	-11.1	-11.4	-11.4
-9.9	-9.7	-9.8	-9.5	-8.9	-8.6	-8.4	-8.0	-6.9	-7.1	-8.6	-8.9	-9.9	-8.4	-8.3	-8.6	-8.8	-9.2	-9.7	-10.1	-10.4	-10.0	-10.0	-10.3	-9.8	-9.3	-8.3	-8.2	-9.1	-10.9	-11.4	-10.6	-10.3	-9.5	-9.5	-9.8
-6.4	-6.2	-6.4	-6.5	-6.1	-6.2	-6.6	-6.3	-5.2	-5.4	-6.2	-7.5	-7.0	-6.1	-5.6	-5.9	-6.3	-6.1	-6.4	-6.7	-7.6	-7.4	-7.1	-7.2	-7.3	-6.6	-5.5	-4.8	-5.2	-6.5	-6.8	-6.5	-6.4	-6.6	-6.4	-6.5
-3.9	-3.8	-3.4	-3.1	-2.5	-2.2	-2.6	-3.1	-3.2	-3.4	-3.7	-4.4	-3.4	-2.7	-2.0	-1.7	-1.7	-1.3	-.9	-.8	-1.3	-1.4	-1.6	-2.0	-2.3	-2.0	-1.6	-1.0	-.8	-1.0	-1.5	-1.9	-2.4	-3.1	-3.3	-4.0
-.6	-.2	.8	1.5	1.7	1.7	1.4	.9	.3	.0	-.1	-.1	.5	1.1	1.9	2.4	2.8	3.4	3.7	3.4	3.3	3.1	2.8	2.4	2.1	2.2	2.3	2.6	2.6	2.5	2.2	1.6	1.1	.4	-.1	-.5
3.8	3.9	4.3	4.5	4.5	4.3	4.1	3.9	3.6	3.4	3.3	3.9	4.0	4.2	4.4	4.6	5.0	5.3	5.4	5.1	5.0	5.1	5.5	5.9	5.2	4.8	5.7	6.4	6.2	5.8	5.9	5.9	5.1	4.4	3.9	3.7
5.8	5.7	5.9	6.4	7.2	7.5	7.3	7.2	7.4	7.1	6.8	7.1	6.3	6.1	6.0	6.9	8.4	10.4	11.1	11.1	11.1	11.6	12.2	12.8	11.1	11.2	13.0	13.7	13.6	12.9	12.5	12.3	11.5	10.6	7.9	6.1
8.6	8.3	8.2	8.7	9.1	9.5	10.1	10.8	11.0	10.4	9.4	8.9	8.9	9.1	9.6	10.4	11.1	11.7	12.2	12.5	12.9	13.3	13.7	14.0	14.2	14.4	14.4	14.3	13.9	13.5	13.0	12.3	11.5	10.7	9.4	8.8

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



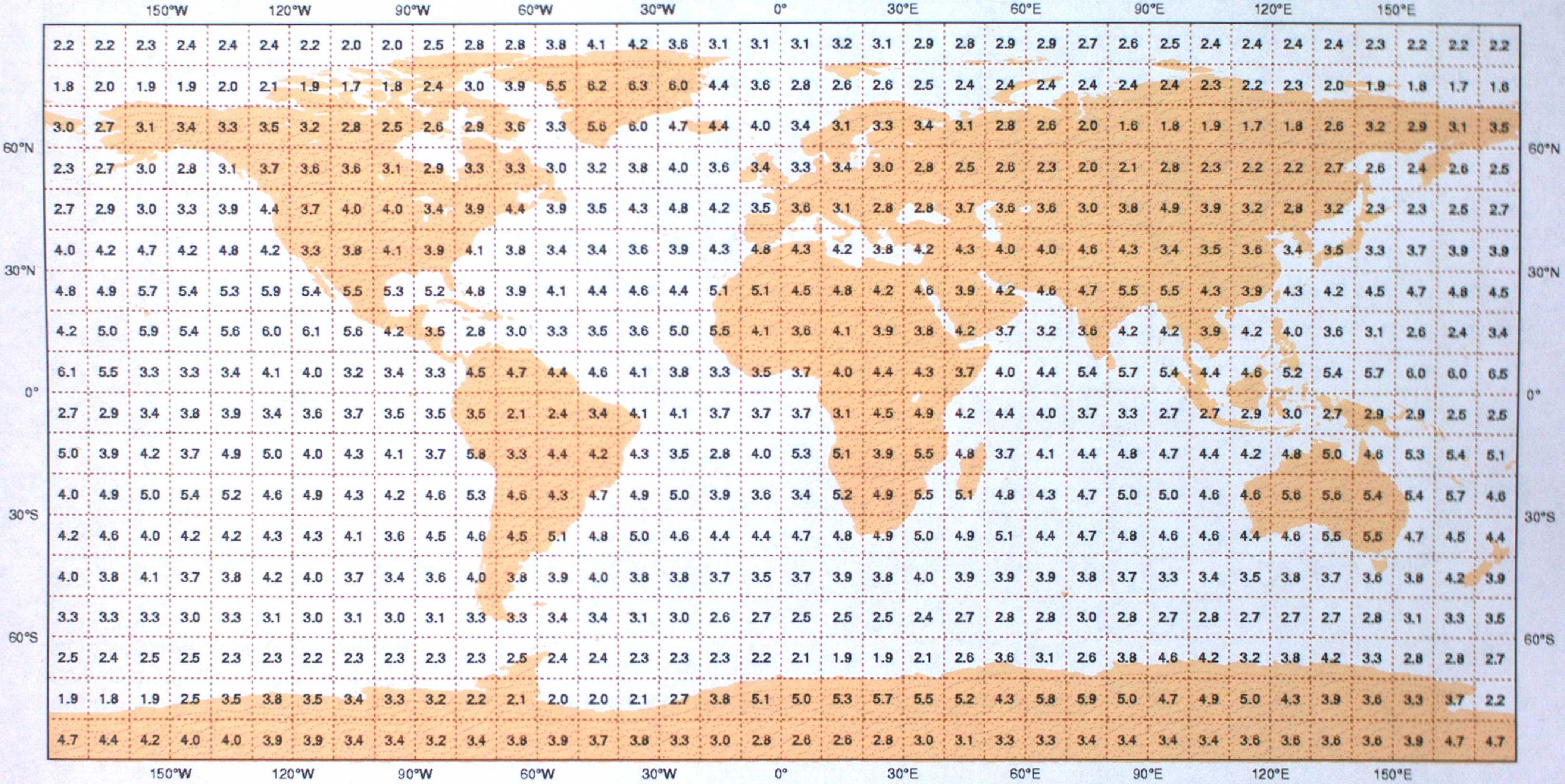
2.7	2.7	2.6	2.5	2.4	2.3	2.3	2.3	2.3	2.5	2.6	2.9	3.3	3.6	3.5	3.6	3.7	3.8	3.7	3.8	3.9	3.9	3.9	3.9	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.7
2.1	2.3	2.4	2.5	2.5	2.5	2.4	2.4	2.5	2.9	3.5	4.3	5.1	5.2	5.4	5.5	4.8	4.2	3.7	3.7	3.5	3.6	3.5	3.4	3.4	3.4	3.2	2.9	2.6	2.5	2.4	2.4	2.4	2.3	2.1	2.0
2.7	3.0	3.3	3.6	3.9	4.2	4.1	3.6	2.9	3.0	3.5	4.4	4.9	5.5	5.7	5.1	4.7	4.3	3.9	3.7	3.6	3.7	3.5	3.1	3.0	2.9	2.4	2.2	2.0	2.0	2.1	2.4	2.6	2.5	2.4	2.7
2.6	2.8	2.9	2.8	3.6	4.1	4.1	4.4	3.9	4.1	4.4	4.0	3.6	3.6	3.9	3.8	3.3	3.0	3.1	3.1	3.0	3.1	3.1	3.0	2.8	2.6	2.4	2.2	2.1	1.8	1.9	2.0	2.7	2.5	2.5	2.5
3.1	3.1	3.3	3.5	3.3	3.4	3.4	4.0	4.2	4.4	4.6	4.5	4.3	4.0	3.3	3.5	3.5	3.3	3.4	3.3	3.4	3.8	4.0	3.8	3.6	3.2	3.5	3.8	3.2	2.9	2.5	2.9	2.7	2.8	2.8	3.0
3.8	3.8	4.1	3.9	3.5	3.4	3.6	4.1	3.8	4.0	4.2	3.7	3.7	3.6	3.4	3.2	3.3	3.6	3.2	3.3	3.8	4.4	4.3	3.8	3.8	4.6	3.6	3.4	3.8	3.7	4.2	4.2	4.3	4.3	4.0	3.7
3.8	3.9	3.7	3.7	3.6	3.7	3.9	4.1	3.7	3.6	3.5	3.7	3.7	3.5	3.5	3.6	3.7	4.2	3.7	4.0	4.1	4.3	4.1	4.2	4.2	4.0	5.3	4.9	4.1	4.1	4.1	3.7	3.9	3.7	3.7	3.6
3.4	3.4	3.5	3.3	3.4	3.5	3.5	3.6	3.4	3.4	3.4	3.4	3.5	3.4	3.5	3.5	3.8	4.1	3.8	3.9	4.1	3.8	3.4	3.4	3.4	3.6	3.5	3.6	3.5	3.4	3.4	3.4	3.4	3.3	3.3	3.3
3.3	3.4	3.3	3.3	3.4	3.3	3.4	3.4	3.3	3.4	3.3	3.4	3.4	3.4	3.3	3.3	3.4	3.5	3.6	3.7	4.0	3.6	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.4	3.3	3.4	3.4	3.3	3.4
3.3	3.4	3.3	3.3	3.4	3.4	3.3	3.4	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.6	3.4	3.4	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.4	3.4	3.3	3.4	3.3	3.4
3.4	3.5	3.3	3.4	3.5	3.5	3.5	3.4	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.4	3.3	3.4	3.5	3.5	3.4	3.4	3.4	3.4	3.4
3.7	3.7	3.4	3.5	3.6	3.5	3.4	3.4	3.4	3.4	3.3	3.8	3.5	3.4	3.5	3.5	3.4	3.3	3.3	3.7	3.9	3.6	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.8	4.0	3.8	3.7	3.5	3.6	3.7
3.5	3.6	3.4	3.8	3.7	3.5	3.5	3.2	3.4	3.3	3.3	3.9	3.5	3.4	3.6	3.6	3.4	3.4	3.5	3.8	4.0	3.7	3.5	3.5	3.6	3.5	3.5	3.5	3.6	3.9	3.7	3.6	4.0	3.7	3.6	3.5
3.5	3.4	3.5	3.6	3.5	3.6	3.6	3.5	3.4	3.3	3.5	3.8	3.6	3.3	3.4	3.5	3.5	3.4	3.5	3.8	3.8	3.7	3.6	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.5	3.3	3.5	3.7	3.7	3.8
3.5	3.3	3.3	3.2	3.0	3.2	3.1	3.0	3.0	3.3	3.3	3.3	3.3	3.2	3.0	3.0	2.9	2.7	2.8	2.9	2.7	2.8	3.0	3.2	3.1	3.3	3.4	3.2	3.0	2.9	2.9	3.0	3.2	3.2	3.3	3.5
2.6	2.6	2.5	2.3	2.3	2.3	2.3	2.2	2.3	2.5	2.7	2.8	2.7	2.6	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.7	3.2	2.9	2.6	3.1	3.3	3.3	3.1	3.2	3.4	3.1	2.7	2.5	2.6
1.8	1.7	1.8	2.0	2.2	2.3	2.3	2.4	2.4	2.5	2.2	2.1	2.2	2.2	2.1	2.2	2.3	2.3	2.5	2.6	2.9	2.7	2.4	2.0	2.8	2.9	2.3	2.1	2.2	2.1	1.9	1.8	1.7	1.7	2.2	1.9
2.7	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.2	2.1	2.3	2.4	2.5	2.4	2.4	2.0	1.8	1.6	1.5	1.6	1.7	1.7	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	2.1	2.7	2.7

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



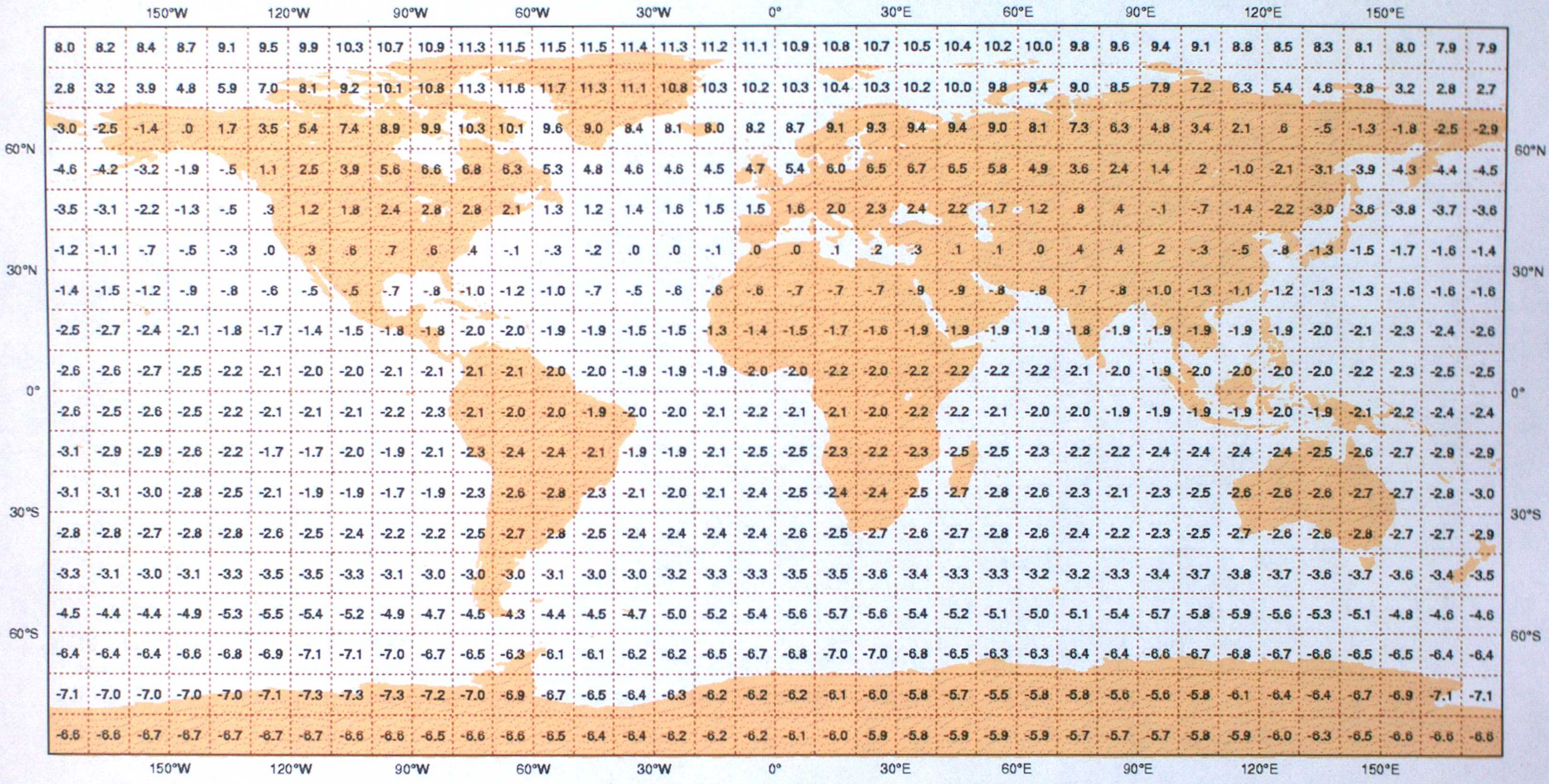
9.2	9.3	9.4	9.6	10.0	10.3	10.5	10.6	10.9	11.3	11.4	10.7	11.1	11.0	11.1	9.3	7.8	7.2	6.6	6.1	6.0	6.3	6.4	6.3	6.5	6.9	7.2	7.5	7.7	8.0	8.2	8.7	9.0	9.2	9.3	9.2
8.8	8.4	8.3	8.6	9.2	10.1	11.2	11.7	12.2	12.6	11.4	10.8	11.2	13.5	13.1	7.2	3.3	3.0	2.9	3.4	3.6	3.8	4.2	4.9	5.8	6.4	7.5	8.4	8.8	8.6	9.0	9.0	9.2	9.4	9.4	9.3
6.6	5.5	5.7	6.3	6.5	6.9	7.8	9.8	11.2	11.1	10.3	8.5	5.4	6.8	3.1	.7	.1	.4	1.6	2.8	2.7	3.4	4.3	5.0	5.7	6.9	8.8	11.0	11.2	11.4	12.0	13.1	12.2	10.7	9.8	8.2
1.8	1.5	1.0	.8	1.4	2.0	2.7	4.6	6.4	6.8	7.4	6.5	3.2	1.1	-.8	-1.5	-1.5	.0	1.0	1.5	2.3	3.8	3.7	3.5	4.1	6.1	8.2	10.3	10.5	11.8	10.8	10.8	5.9	4.6	3.8	2.4
.6	.0	-.1	-.7	-2.3	-2.9	-1.0	-.5	.8	1.9	2.2	.8	-.5	-1.0	-2.3	-4.4	-3.6	-1.5	.1	1.4	1.9	1.8	1.5	1.1	1.2	3.5	5.6	7.7	7.9	7.8	6.6	5.4	3.8	2.5	1.9	1.4
-2.6	-3.3	-3.8	-3.3	-3.9	-3.1	-1.9	-1.9	-2.9	-2.7	-3.2	-2.8	-2.7	-2.7	-3.1	-4.6	-4.7	-4.5	-3.5	-3.2	-2.9	-2.9	-2.1	-1.8	-.7	2.6	3.7	3.9	.4	-.5	-.7	-.9	-.9	-1.3	-1.9	-2.5
-11.1	-10.6	-8.2	-8.2	-8.8	-8.2	-6.8	-5.0	-5.6	-7.0	-8.3	-8.4	-7.3	-5.6	-6.5	-8.0	-8.1	-7.6	-7.6	-6.6	-6.3	-8.6	-6.8	-6.4	-6.8	-7.4	-6.3	-6.9	-6.7	-5.9	-6.1	-6.7	-8.1	-9.9	-10.9	-11.1
-15.4	-13.2	-8.6	-7.4	-7.7	-7.3	-5.9	-8.4	-11.2	-13.4	-14.8	-14.0	-12.5	-12.4	-12.6	-11.1	-7.6	-5.4	-5.9	-9.6	-11.6	-11.8	-12.9	-14.7	-15.4	-13.5	-12.9	-13.7	-13.2	-12.3	-12.2	-13.3	-14.1	-16.2	-16.8	-16.4
-6.0	-6.3	-5.9	-6.6	-7.6	-7.7	-8.8	-10.8	-11.5	-11.8	-8.6	-6.7	-6.1	-5.4	-4.9	-5.3	-5.7	-6.2	-6.9	-9.6	-9.3	-10.3	-14.0	-14.9	-12.6	-10.0	-7.8	-7.7	-8.4	-7.0	-7.4	-7.8	-9.3	-10.7	-10.0	-8.0
-2.4	-2.6	-4.0	-6.9	-9.0	-10.6	-11.3	-12.4	-13.0	-11.6	-3.6	-1.7	-2.1	-3.6	-6.1	-8.9	-10.2	-9.4	-5.5	-4.0	-5.3	-7.8	-9.3	-6.6	-5.1	-4.5	-3.8	-3.1	-2.7	-2.6	-3.0	-2.5	-2.7	-2.7	-2.4	-2.1
-7.5	-3.8	-3.4	-3.4	-5.7	-7.5	-10.7	-13.1	-13.1	-13.7	-7.3	-3.3	-6.0	-7.1	-6.9	-11.9	-13.2	-14.1	-11.7	-5.0	-4.6	-7.4	-6.2	-4.4	-4.3	-4.9	-6.4	-7.4	-9.4	-7.5	-7.1	-7.4	-6.9	-7.0	-7.1	-7.5
-10.7	-8.1	-6.3	-6.1	-5.3	-4.6	-7.1	-7.7	-7.9	-10.9	-12.5	-6.5	-7.2	-7.8	-5.1	-6.3	-12.3	-13.8	-14.3	-11.3	-8.4	-10.9	-9.9	-6.5	-6.4	-7.1	-7.0	-8.3	-10.1	-9.3	-10.1	-12.2	-11.9	-11.0	-10.4	-10.6
-6.4	-7.2	-7.9	-6.6	-6.3	-4.2	-3.6	-5.0	-4.2	-6.1	-9.9	-8.3	-7.5	-6.2	-5.4	-3.9	-4.1	-6.4	-7.5	-8.9	-9.1	-7.8	-8.1	-7.4	-5.8	-6.5	-6.6	-6.9	-7.1	-7.0	-6.7	-7.9	-8.2	-7.7	-7.8	-6.8
-4.3	-4.0	-4.0	-3.9	-3.6	-3.6	-3.2	-3.1	-3.2	-3.2	-4.7	-4.8	-4.3	-4.0	-3.3	-3.0	-2.6	-2.3	-2.5	-2.2	-2.7	-3.0	-3.0	-3.3	-3.1	-3.0	-2.7	-2.2	-1.9	-2.2	-2.7	-3.1	-2.7	-3.0	-3.2	-3.7
-1.3	-1.3	-.8	-.4	.0	.1	.0	-.2	-.4	-.8	-1.0	-1.0	-.9	-.5	.0	.4	.6	.9	1.3	1.4	1.3	1.4	1.1	.8	.4	.2	.6	1.0	1.1	.8	.9	.3	-.1	-.4	-1.0	-1.2
1.4	1.7	1.9	2.2	2.2	2.3	2.2	1.8	1.6	1.6	1.7	2.1	1.8	1.8	2.0	2.1	2.2	2.4	2.7	2.8	2.9	3.1	3.6	4.4	3.2	2.3	3.7	4.9	5.1	4.5	4.6	4.8	3.1	1.8	1.3	1.1
3.1	3.0	3.4	4.0	5.3	5.8	5.4	5.4	5.8	5.3	4.7	5.0	3.8	3.4	3.3	4.4	6.4	10.4	12.3	12.5	12.5	13.5	15.1	16.7	12.5	13.0	17.4	19.7	19.5	17.8	17.1	16.6	14.7	12.3	6.1	3.4
7.5	6.9	6.6	7.4	8.1	8.9	10.2	12.1	12.4	10.6	8.5	7.5	7.6	8.1	9.0	10.6	12.2	13.9	15.2	16.0	16.5	17.6	19.1	20.1	20.8	21.3	21.3	20.8	19.9	18.7	17.4	15.8	14.1	12.1	9.0	7.7

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



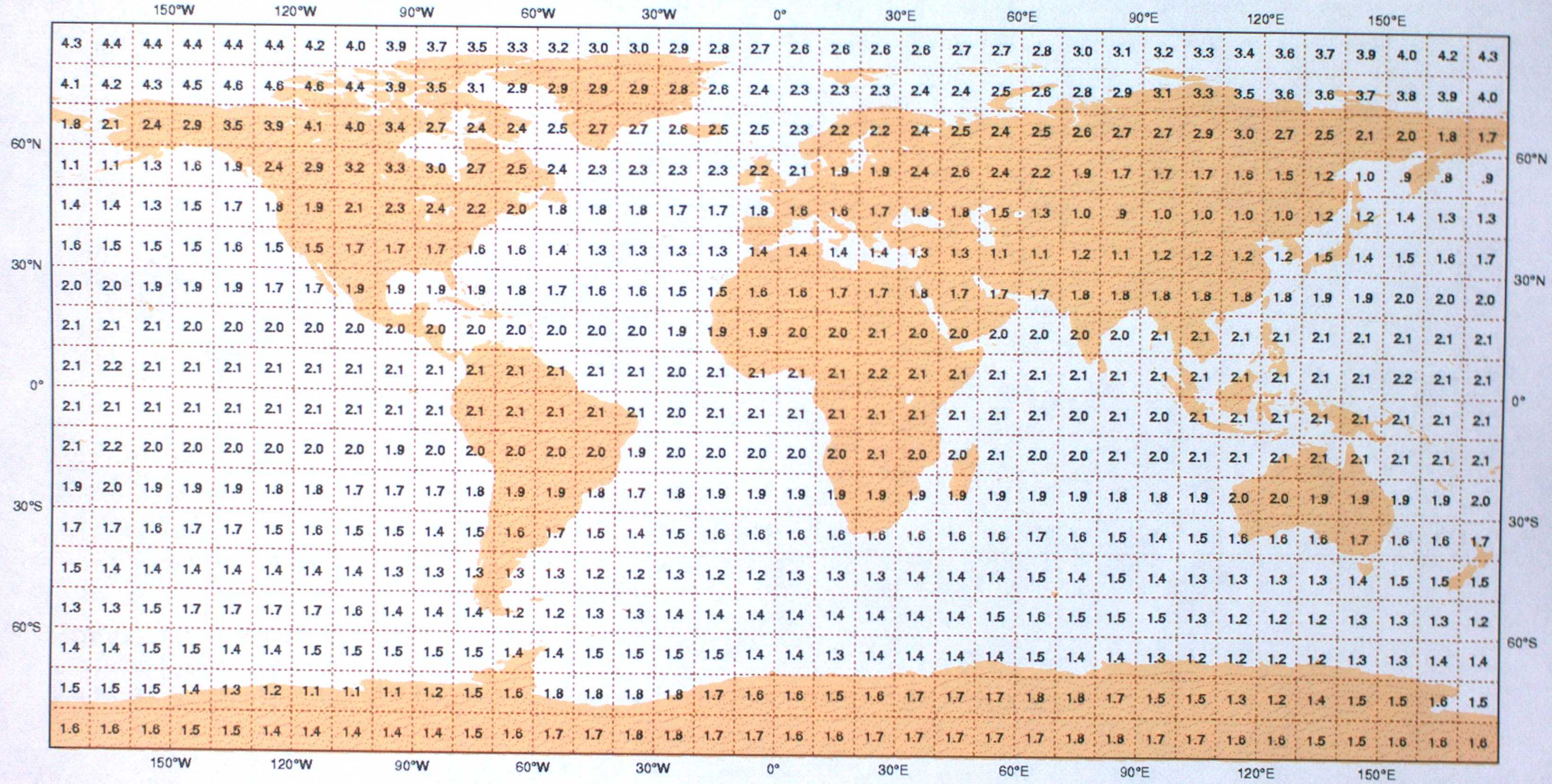
2.2	2.2	2.3	2.4	2.4	2.4	2.2	2.0	2.0	2.5	2.8	2.8	3.8	4.1	4.2	3.6	3.1	3.1	3.1	3.2	3.1	2.9	2.8	2.9	2.9	2.7	2.6	2.5	2.4	2.4	2.4	2.4	2.3	2.2	2.2	2.2
1.8	2.0	1.9	1.9	2.0	2.1	1.9	1.7	1.8	2.4	3.0	3.9	5.5	6.2	6.3	6.0	4.4	3.6	2.8	2.6	2.6	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.2	2.3	2.0	1.9	1.8	1.7	1.6
3.0	2.7	3.1	3.4	3.3	3.5	3.2	2.8	2.5	2.6	2.9	3.6	3.3	5.6	6.0	4.7	4.4	4.0	3.4	3.1	3.3	3.4	3.1	2.8	2.6	2.0	1.6	1.8	1.9	1.7	1.8	2.6	3.2	2.9	3.1	3.5
2.3	2.7	3.0	2.8	3.1	3.7	3.6	3.6	3.1	2.9	3.3	3.3	3.0	3.2	3.8	4.0	3.6	3.4	3.3	3.4	3.0	2.8	2.5	2.6	2.3	2.0	2.1	2.8	2.3	2.2	2.2	2.7	2.6	2.4	2.6	2.5
2.7	2.9	3.0	3.3	3.9	4.4	3.7	4.0	4.0	3.4	3.9	4.4	3.9	3.5	4.3	4.8	4.2	3.5	3.6	3.1	2.8	2.8	3.7	3.6	3.6	3.0	3.8	4.9	3.9	3.2	2.8	3.2	2.3	2.3	2.5	2.7
4.0	4.2	4.7	4.2	4.8	4.2	3.3	3.8	4.1	3.9	4.1	3.8	3.4	3.4	3.6	3.9	4.3	4.8	4.3	4.2	3.8	4.2	4.3	4.0	4.0	4.6	4.3	3.4	3.5	3.6	3.4	3.5	3.3	3.7	3.9	3.9
4.8	4.9	5.7	5.4	5.3	5.9	5.4	5.5	5.3	5.2	4.8	3.9	4.1	4.4	4.6	4.4	5.1	5.1	4.5	4.8	4.2	4.6	3.9	4.2	4.6	4.7	5.5	5.5	4.3	3.9	4.3	4.2	4.5	4.7	4.8	4.5
4.2	5.0	5.9	5.4	5.6	6.0	6.1	5.6	4.2	3.5	2.8	3.0	3.3	3.5	3.6	5.0	5.5	4.1	3.6	4.1	3.9	3.8	4.2	3.7	3.2	3.6	4.2	4.2	3.9	4.2	4.0	3.6	3.1	2.6	2.4	3.4
6.1	5.5	3.3	3.3	3.4	4.1	4.0	3.2	3.4	3.3	4.5	4.7	4.4	4.6	4.1	3.8	3.3	3.5	3.7	4.0	4.4	4.3	3.7	4.0	4.4	5.4	5.7	5.4	4.4	4.6	5.2	5.4	5.7	6.0	6.0	6.5
2.7	2.9	3.4	3.8	3.9	3.4	3.6	3.7	3.5	3.5	3.5	2.1	2.4	3.4	4.1	4.1	3.7	3.7	3.7	3.1	4.5	4.9	4.2	4.4	4.0	3.7	3.3	2.7	2.7	2.9	3.0	2.7	2.9	2.9	2.5	2.5
5.0	3.9	4.2	3.7	4.9	5.0	4.0	4.3	4.1	3.7	5.8	3.3	4.4	4.2	4.3	3.5	2.8	4.0	5.3	5.1	3.9	5.5	4.8	3.7	4.1	4.4	4.8	4.7	4.4	4.2	4.8	5.0	4.6	5.3	5.4	5.1
4.0	4.9	5.0	5.4	5.2	4.6	4.9	4.3	4.2	4.6	5.3	4.6	4.3	4.7	4.9	5.0	3.9	3.6	3.4	5.2	4.9	5.5	5.1	4.8	4.3	4.7	5.0	5.0	4.6	4.6	5.6	5.6	5.4	5.4	5.7	4.6
4.2	4.6	4.0	4.2	4.2	4.3	4.3	4.1	3.6	4.5	4.6	4.5	5.1	4.8	5.0	4.6	4.4	4.4	4.7	4.8	4.9	5.0	4.9	5.1	4.4	4.7	4.8	4.6	4.6	4.4	4.6	5.5	5.5	4.7	4.5	4.4
4.0	3.8	4.1	3.7	3.8	4.2	4.0	3.7	3.4	3.6	4.0	3.8	3.9	4.0	3.8	3.8	3.7	3.5	3.7	3.9	3.8	4.0	3.9	3.9	3.9	3.8	3.7	3.3	3.4	3.5	3.8	3.7	3.6	3.8	4.2	3.9
3.3	3.3	3.3	3.0	3.3	3.1	3.0	3.1	3.0	3.1	3.3	3.3	3.4	3.4	3.1	3.0	2.6	2.7	2.5	2.5	2.5	2.4	2.7	2.8	2.8	3.0	2.8	2.7	2.8	2.7	2.7	2.7	2.8	3.1	3.3	3.5
2.5	2.4	2.5	2.5	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.5	2.4	2.4	2.3	2.3	2.3	2.2	2.1	1.9	1.9	2.1	2.6	3.6	3.1	2.6	3.8	4.6	4.2	3.2	3.8	4.2	3.3	2.8	2.8	2.7
1.9	1.8	1.9	2.5	3.5	3.8	3.5	3.4	3.3	3.2	2.2	2.1	2.0	2.0	2.1	2.7	3.8	5.1	5.0	5.3	5.7	5.5	5.2	4.3	5.8	5.9	5.0	4.7	4.9	5.0	4.3	3.9	3.6	3.3	3.7	2.2
4.7	4.4	4.2	4.0	4.0	3.9	3.9	3.4	3.4	3.2	3.4	3.8	3.9	3.7	3.8	3.3	3.0	2.8	2.6	2.6	2.8	3.0	3.1	3.3	3.3	3.4	3.4	3.4	3.4	3.6	3.6	3.6	3.6	3.9	4.7	4.7

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



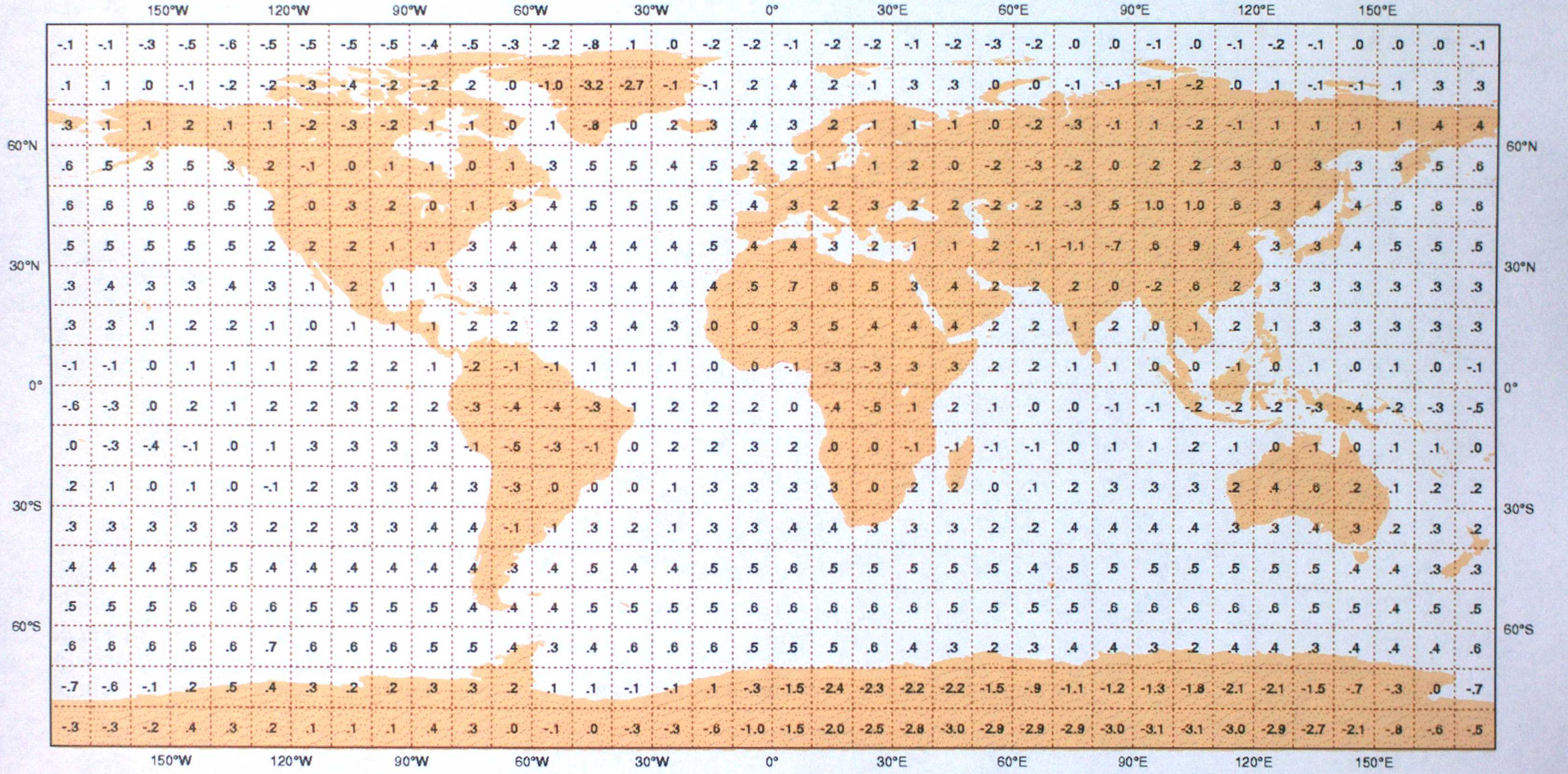
8.0	8.2	8.4	8.7	9.1	9.5	9.9	10.3	10.7	10.9	11.3	11.5	11.5	11.5	11.4	11.3	11.2	11.1	10.9	10.8	10.7	10.5	10.4	10.2	10.0	9.8	9.6	9.4	9.1	8.8	8.5	8.3	8.1	8.0	7.9	7.9
2.8	3.2	3.9	4.8	5.9	7.0	8.1	9.2	10.1	10.8	11.3	11.6	11.7	11.3	11.1	10.8	10.3	10.2	10.3	10.4	10.3	10.2	10.0	9.8	9.4	9.0	8.5	7.9	7.2	6.3	5.4	4.6	3.8	3.2	2.8	2.7
-3.0	-2.5	-1.4	.0	1.7	3.5	5.4	7.4	8.9	9.9	10.3	10.1	9.6	9.0	8.4	8.1	8.0	8.2	8.7	9.1	9.3	9.4	9.4	9.0	8.1	7.3	6.3	4.8	3.4	2.1	.6	-.5	-1.3	-1.8	-2.5	-2.9
-4.6	-4.2	-3.2	-1.9	-.5	1.1	2.5	3.9	5.6	6.6	6.8	6.3	5.3	4.8	4.6	4.6	4.5	4.7	5.4	6.0	6.5	6.7	6.5	5.8	4.9	3.6	2.4	1.4	.2	-1.0	-2.1	-3.1	-3.9	-4.3	-4.4	-4.5
-3.5	-3.1	-2.2	-1.3	-.5	.3	1.2	1.8	2.4	2.8	2.8	2.1	1.3	1.2	1.4	1.6	1.5	1.5	1.6	2.0	2.3	2.4	2.2	1.7	1.2	.8	.4	-.1	-.7	-1.4	-2.2	-3.0	-3.6	-3.8	-3.7	-3.6
-1.2	-1.1	-.7	-.5	-.3	.0	.3	.6	.7	.6	.4	-.1	-.3	-.2	.0	.0	-.1	.0	.0	.1	.2	.3	.1	.1	.0	.4	.4	.2	-.3	-.5	-.8	-1.3	-1.5	-1.7	-1.6	-1.4
-1.4	-1.5	-1.2	-.9	-.8	-.6	-.5	-.5	-.7	-.8	-1.0	-1.2	-1.0	-.7	-.5	-.6	-.6	-.6	-.7	-.7	-.7	-.9	-.9	-.8	-.8	-.7	-.8	-1.0	-1.3	-1.1	-1.2	-1.3	-1.3	-1.6	-1.6	-1.6
-2.5	-2.7	-2.4	-2.1	-1.8	-1.7	-1.4	-1.5	-1.8	-1.8	-2.0	-2.0	-1.9	-1.9	-1.5	-1.5	-1.3	-1.4	-1.5	-1.7	-1.6	-1.9	-1.9	-1.9	-1.9	-1.8	-1.9	-1.9	-1.9	-1.9	-1.9	-2.0	-2.1	-2.3	-2.4	-2.6
-2.6	-2.6	-2.7	-2.5	-2.2	-2.1	-2.0	-2.0	-2.1	-2.1	-2.1	-2.1	-2.0	-2.0	-1.9	-1.9	-1.9	-2.0	-2.0	-2.2	-2.0	-2.2	-2.2	-2.2	-2.2	-2.1	-2.0	-1.9	-2.0	-2.0	-2.0	-2.0	-2.2	-2.3	-2.5	-2.5
-2.6	-2.5	-2.6	-2.5	-2.2	-2.1	-2.1	-2.1	-2.2	-2.3	-2.1	-2.0	-2.0	-1.9	-2.0	-2.0	-2.1	-2.2	-2.1	-2.1	-2.0	-2.2	-2.2	-2.1	-2.0	-2.0	-1.9	-1.9	-1.9	-1.9	-2.0	-1.9	-2.1	-2.2	-2.4	-2.4
-3.1	-2.9	-2.9	-2.6	-2.2	-1.7	-1.7	-2.0	-1.9	-2.1	-2.3	-2.4	-2.4	-2.1	-1.9	-1.9	-2.1	-2.5	-2.5	-2.3	-2.2	-2.3	-2.5	-2.5	-2.3	-2.2	-2.2	-2.4	-2.4	-2.4	-2.4	-2.5	-2.6	-2.7	-2.9	-2.9
-3.1	-3.1	-3.0	-2.8	-2.5	-2.1	-1.9	-1.9	-1.7	-1.9	-2.3	-2.6	-2.8	-2.3	-2.1	-2.0	-2.1	-2.4	-2.5	-2.4	-2.4	-2.5	-2.7	-2.8	-2.6	-2.3	-2.1	-2.3	-2.5	-2.6	-2.6	-2.6	-2.7	-2.7	-2.8	-3.0
-2.8	-2.8	-2.7	-2.8	-2.8	-2.6	-2.5	-2.4	-2.2	-2.2	-2.5	-2.7	-2.8	-2.5	-2.4	-2.4	-2.4	-2.4	-2.6	-2.5	-2.7	-2.6	-2.7	-2.8	-2.6	-2.4	-2.2	-2.3	-2.5	-2.7	-2.6	-2.6	-2.8	-2.7	-2.7	-2.9
-3.3	-3.1	-3.0	-3.1	-3.3	-3.5	-3.5	-3.3	-3.1	-3.0	-3.0	-3.0	-3.1	-3.0	-3.0	-3.2	-3.3	-3.3	-3.5	-3.5	-3.6	-3.4	-3.3	-3.3	-3.2	-3.2	-3.3	-3.4	-3.7	-3.8	-3.7	-3.6	-3.7	-3.6	-3.4	-3.5
-4.5	-4.4	-4.4	-4.9	-5.3	-5.5	-5.4	-5.2	-4.9	-4.7	-4.5	-4.3	-4.4	-4.5	-4.7	-5.0	-5.2	-5.4	-5.6	-5.7	-5.6	-5.4	-5.2	-5.1	-5.0	-5.1	-5.4	-5.7	-5.8	-5.9	-5.6	-5.3	-5.1	-4.8	-4.6	-4.6
-6.4	-6.4	-6.4	-6.6	-6.8	-6.9	-7.1	-7.1	-7.0	-6.7	-6.5	-6.3	-6.1	-6.1	-6.2	-6.2	-6.5	-6.7	-6.8	-7.0	-7.0	-6.8	-6.5	-6.3	-6.3	-6.4	-6.4	-6.6	-6.7	-6.8	-6.7	-6.6	-6.5	-6.5	-6.4	-6.4
-7.1	-7.0	-7.0	-7.0	-7.0	-7.1	-7.3	-7.3	-7.3	-7.2	-7.0	-6.9	-6.7	-6.5	-6.4	-6.3	-6.2	-6.2	-6.2	-6.1	-6.0	-5.8	-5.7	-5.5	-5.8	-5.8	-5.6	-5.6	-5.8	-6.1	-6.4	-6.4	-6.7	-6.9	-7.1	-7.1
-6.6	-6.6	-6.7	-6.7	-6.7	-6.7	-6.7	-6.6	-6.6	-6.5	-6.6	-6.6	-6.5	-6.4	-6.4	-6.2	-6.2	-6.2	-6.1	-6.0	-5.9	-5.8	-5.9	-5.9	-5.9	-5.7	-5.7	-5.7	-5.8	-5.9	-6.0	-6.3	-6.5	-6.6	-6.6	-6.6

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



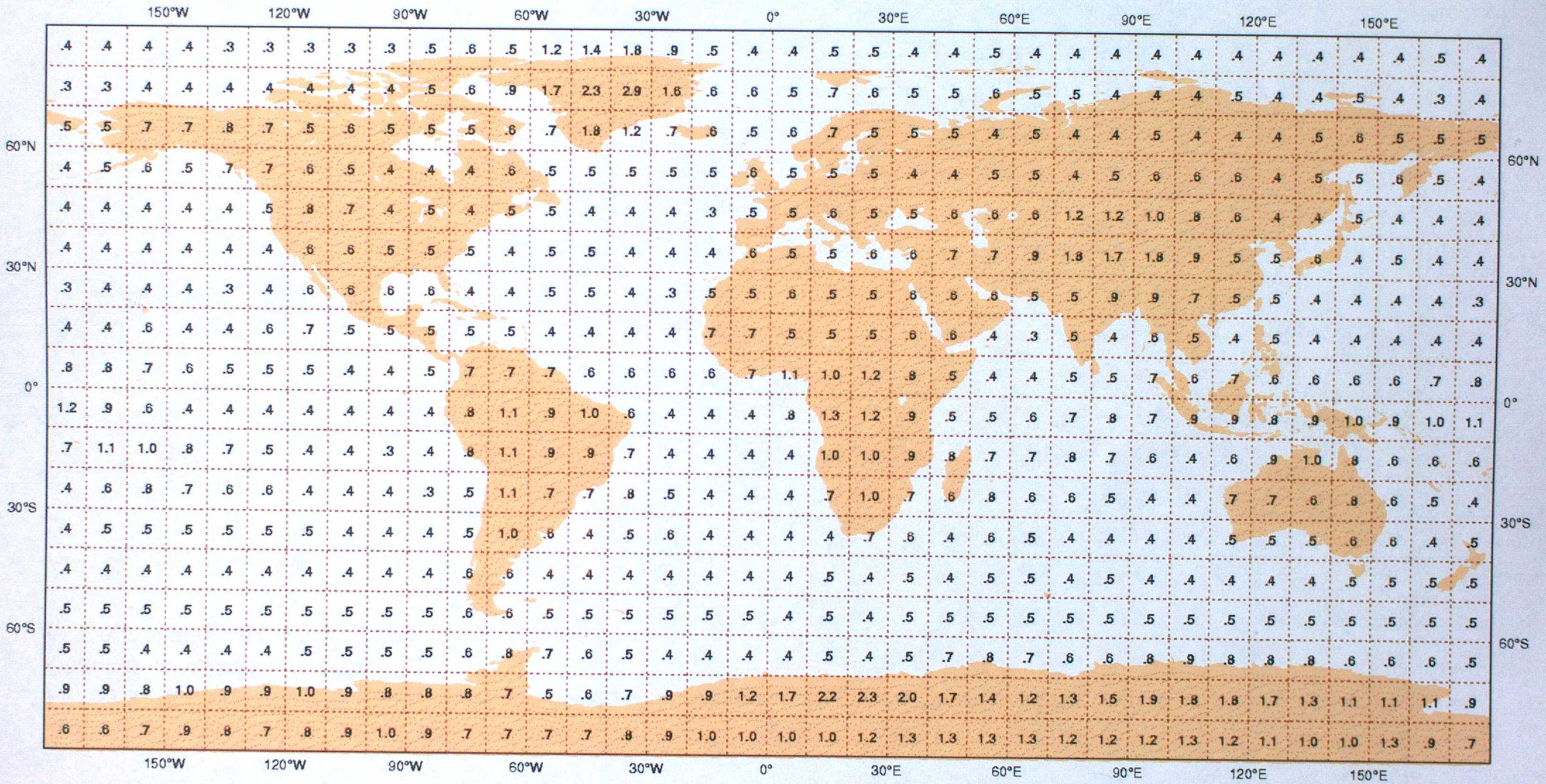
4.3	4.4	4.4	4.4	4.4	4.4	4.2	4.0	3.9	3.7	3.5	3.3	3.2	3.0	3.0	2.9	2.8	2.7	2.6	2.6	2.6	2.6	2.7	2.7	2.8	3.0	3.1	3.2	3.3	3.4	3.6	3.7	3.9	4.0	4.2	4.3
4.1	4.2	4.3	4.5	4.6	4.6	4.6	4.4	3.9	3.5	3.1	2.9	2.9	2.9	2.9	2.8	2.6	2.4	2.3	2.3	2.3	2.4	2.4	2.5	2.6	2.8	2.9	3.1	3.3	3.5	3.6	3.6	3.7	3.8	3.9	4.0
1.8	2.1	2.4	2.9	3.5	3.9	4.1	4.0	3.4	2.7	2.4	2.4	2.5	2.7	2.7	2.6	2.5	2.5	2.3	2.2	2.2	2.4	2.5	2.4	2.5	2.6	2.7	2.7	2.9	3.0	2.7	2.5	2.1	2.0	1.8	1.7
1.1	1.1	1.3	1.6	1.9	2.4	2.9	3.2	3.3	3.0	2.7	2.5	2.4	2.3	2.3	2.3	2.3	2.2	2.1	1.9	1.9	2.4	2.6	2.4	2.2	1.9	1.7	1.7	1.7	1.6	1.5	1.2	1.0	.9	.8	.9
1.4	1.4	1.3	1.5	1.7	1.8	1.9	2.1	2.3	2.4	2.2	2.0	1.8	1.8	1.8	1.7	1.7	1.8	1.6	1.6	1.7	1.8	1.8	1.5	1.3	1.0	.9	1.0	1.0	1.0	1.0	1.2	1.2	1.4	1.3	1.3
1.6	1.5	1.5	1.5	1.6	1.5	1.5	1.7	1.7	1.7	1.6	1.6	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.3	1.3	1.1	1.1	1.2	1.1	1.2	1.2	1.2	1.2	1.5	1.4	1.5	1.6	1.7
2.0	2.0	1.9	1.9	1.9	1.7	1.7	1.9	1.9	1.9	1.9	1.8	1.7	1.6	1.6	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.0	2.0
2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1
2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
2.1	2.2	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
1.9	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.8	1.9	1.9	1.8	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.9	2.0	2.0	1.9	1.9	1.9	1.9	2.0
1.7	1.7	1.6	1.7	1.7	1.5	1.6	1.5	1.5	1.4	1.5	1.6	1.7	1.5	1.4	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.6	1.5	1.4	1.5	1.6	1.6	1.6	1.7	1.6	1.6	1.7
1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.3	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.4	1.5	1.4	1.3	1.3	1.3	1.3	1.4	1.5	1.5	1.5
1.3	1.3	1.5	1.7	1.7	1.7	1.7	1.6	1.4	1.4	1.4	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.6	1.5	1.5	1.5	1.3	1.2	1.2	1.2	1.3	1.3	1.3	1.2
1.4	1.4	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.4	1.4	1.4	1.4	1.5	1.4	1.4	1.3	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.4
1.5	1.5	1.5	1.4	1.3	1.2	1.1	1.1	1.1	1.2	1.5	1.6	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.5	1.6	1.7	1.7	1.7	1.8	1.8	1.7	1.5	1.5	1.3	1.2	1.4	1.5	1.5	1.6	1.5
1.6	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.6	1.7	1.7	1.8	1.8	1.7	1.7	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.6	1.6	1.6

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



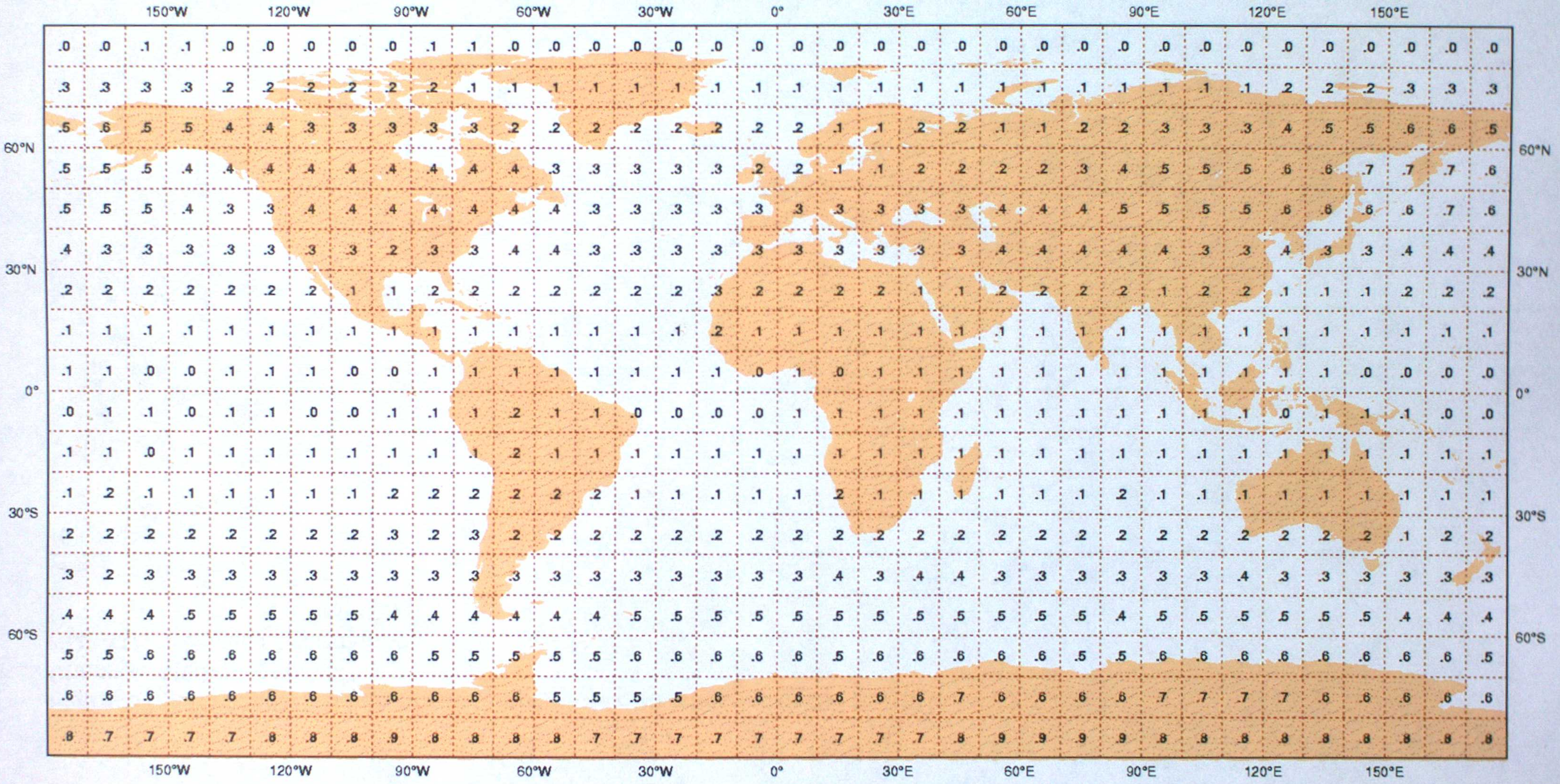
-.1	-.1	-.3	-.5	-.6	-.5	-.5	-.5	-.5	-.4	-.5	-.3	-.2	-.8	.1	.0	-.2	-.2	-.1	-.2	-.2	-.1	-.2	-.3	-.2	.0	.0	-.1	.0	-.1	-.2	-.1	.0	.0	.0	-.1
.1	.1	.0	-.1	-.2	-.2	-.3	-.4	-.2	-.2	.2	.0	-1.0	-3.2	-2.7	-.1	-.1	.2	.4	.2	.1	.3	.3	.0	.0	-.1	-.1	-.1	-.2	.0	.1	-.1	-.1	.1	.3	.3
.3	.1	.1	.2	.1	.1	-.2	-.3	-.2	.1	.1	.0	.1	-.8	.0	.2	.3	.4	.3	.2	.1	.1	.1	.0	-.2	-.3	-.1	.1	-.2	-.1	.1	.1	.1	.1	.4	.4
.6	.5	.3	.5	.3	.2	-.1	.0	.1	.1	.0	.1	.3	.5	.5	.4	.5	.2	.2	.1	.1	.2	.0	-.2	-.3	-.2	.0	.2	.2	.3	.0	.3	.3	.3	.5	.6
.6	.6	.6	.6	.5	.2	.0	.3	.2	.0	.1	.3	.4	.5	.5	.5	.5	.4	.3	.2	.3	.2	.2	-.2	-.2	-.3	.5	1.0	1.0	.6	.3	.4	.4	.5	.6	.6
.5	.5	.5	.5	.5	.2	.2	.2	.1	.1	.3	.4	.4	.4	.4	.4	.5	.4	.4	.3	.2	.1	.1	.2	-.1	-1.1	-.7	.6	.9	.4	.3	.3	.4	.5	.5	.5
.3	.4	.3	.3	.4	.3	.1	.2	.1	.1	.3	.4	.3	.3	.4	.4	.4	.5	.7	.6	.5	.3	.4	.2	.2	.2	.0	-.2	.6	.2	.3	.3	.3	.3	.3	.3
.3	.3	.1	.2	.2	.1	.0	.1	.1	.1	.2	.2	.2	.3	.4	.3	.0	.0	.3	.5	.4	.4	.4	.2	.2	.1	.2	.0	.1	.2	.1	.3	.3	.3	.3	.3
-.1	-.1	.0	.1	.1	.1	.2	.2	.2	.1	-.2	-.1	-.1	.1	.1	.1	.0	.0	-.1	-.3	-.3	.3	.3	.2	.2	.1	.1	.0	.0	-.1	.0	.1	.0	.1	.0	-.1
-.6	-.3	.0	.2	.1	.2	.2	.3	.2	.2	-.3	-.4	-.4	-.3	.1	.2	.2	.2	.0	-.4	-.5	.1	.2	.1	.0	.0	-.1	-.1	-.2	-.2	-.2	-.3	-.4	-.2	-.3	-.5
.0	-.3	-.4	-.1	.0	.1	.3	.3	.3	.3	-.1	-.5	-.3	-.1	.0	.2	.2	.3	.2	.0	.0	-.1	-.1	-.1	-.1	.0	.1	.1	.2	.1	.0	.1	.0	.1	.1	.0
.2	.1	.0	.1	.0	-.1	.2	.3	.3	.4	.3	-.3	.0	.0	.0	.1	.3	.3	.3	.3	.0	.2	.2	.0	.1	.2	.3	.3	.3	.2	.4	.6	.2	.1	.2	.2
.3	.3	.3	.3	.3	.2	.2	.3	.3	.4	.4	-.1	.1	.3	.2	.1	.3	.3	.4	.4	.3	.3	.3	.2	.2	.4	.4	.4	.4	.3	.3	.4	.3	.2	.3	.2
.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.3	.4	.5	.4	.4	.5	.5	.6	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.4	.4	.3	.3
.5	.5	.5	.6	.6	.6	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.6	.6	.6	.6	.6	.5	.5	.5	.5	.6	.6	.6	.6	.6	.5	.5	.4	.5	.5
.6	.6	.6	.6	.6	.7	.6	.6	.6	.5	.5	.4	.3	.4	.6	.6	.6	.5	.5	.5	.6	.4	.3	.2	.3	.4	.4	.3	.2	.4	.4	.3	.4	.4	.4	.6
-.7	-.6	-.1	.2	.5	.4	.3	.2	.2	.3	.3	.2	.1	.1	-.1	-.1	.1	-.3	-1.5	-2.4	-2.3	-2.2	-2.2	-1.5	-.9	-1.1	-1.2	-1.3	-1.8	-2.1	-2.1	-1.5	-.7	-.3	.0	-.7
-.3	-.3	-.2	.4	.3	.2	.1	.1	.1	.4	.3	.0	-.1	.0	-.3	-.3	-.6	-1.0	-1.5	-2.0	-2.5	-2.8	-3.0	-2.9	-2.9	-2.9	-3.0	-3.1	-3.1	-3.0	-2.9	-2.7	-2.1	-.8	-.6	-.5

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



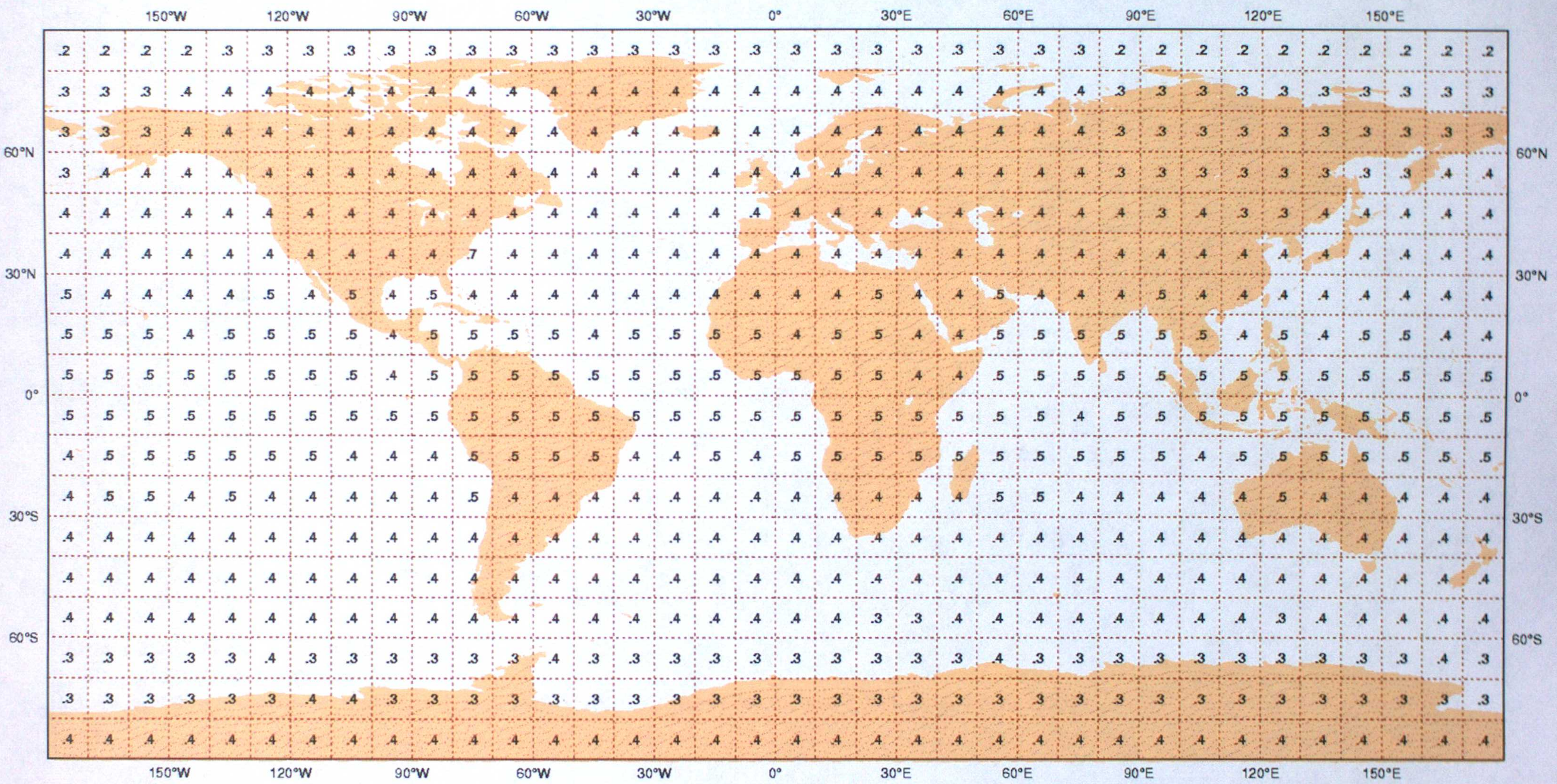
.4	.4	.4	.4	.3	.3	.3	.3	.3	.5	.6	.5	1.2	1.4	1.8	.9	.5	.4	.4	.5	.5	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4
.3	.3	.4	.4	.4	.4	.4	.4	.4	.5	.6	.9	1.7	2.3	2.9	1.6	.6	.6	.5	.7	.6	.5	.5	.6	.5	.5	.4	.4	.4	.5	.4	.4	.5	.4	.3	.4
.5	.5	.7	.7	.8	.7	.5	.6	.5	.5	.5	.6	.7	1.8	1.2	.7	.6	.5	.6	.7	.5	.5	.5	.4	.5	.4	.4	.5	.4	.4	.4	.5	.6	.5	.5	.5
.4	.5	.6	.5	.7	.7	.6	.5	.4	.4	.4	.6	.5	.5	.5	.5	.5	.6	.5	.5	.5	.4	.4	.5	.5	.4	.5	.6	.6	.6	.4	.5	.5	.6	.5	.4
.4	.4	.4	.4	.4	.5	.8	.7	.4	.5	.4	.5	.5	.4	.4	.4	.3	.5	.5	.6	.5	.5	.6	.6	.6	1.2	1.2	1.0	.8	.6	.4	.4	.5	.4	.4	.4
.4	.4	.4	.4	.4	.4	.6	.6	.5	.5	.5	.4	.5	.5	.4	.4	.4	.6	.5	.5	.6	.6	.7	.7	.9	1.8	1.7	1.8	.9	.5	.5	.6	.4	.5	.4	.4
.3	.4	.4	.4	.3	.4	.6	.6	.6	.6	.4	.4	.5	.5	.4	.3	.5	.5	.6	.5	.5	.6	.6	.6	.5	.5	.9	.9	.7	.5	.5	.4	.4	.4	.4	.3
.4	.4	.6	.4	.4	.6	.7	.5	.5	.5	.5	.5	.4	.4	.4	.4	.7	.7	.5	.5	.5	.6	.6	.4	.3	.5	.4	.6	.5	.4	.5	.4	.4	.4	.4	.4
.8	.8	.7	.6	.5	.5	.5	.4	.4	.5	.7	.7	.7	.6	.6	.6	.6	.7	1.1	1.0	1.2	.8	.5	.4	.4	.5	.5	.7	.6	.7	.6	.6	.6	.6	.7	.8
1.2	.9	.6	.4	.4	.4	.4	.4	.4	.4	.8	1.1	.9	1.0	.6	.4	.4	.4	.8	1.3	1.2	.9	.5	.5	.6	.7	.8	.7	.9	.9	.8	.9	1.0	.9	1.0	1.1
.7	1.1	1.0	.8	.7	.5	.4	.4	.3	.4	.8	1.1	.9	.9	.7	.4	.4	.4	.4	1.0	1.0	.9	.8	.7	.7	.8	.7	.6	.4	.6	.9	1.0	.8	.6	.6	.6
.4	.6	.8	.7	.6	.6	.4	.4	.4	.3	.5	1.1	.7	.7	.8	.5	.4	.4	.4	.7	1.0	.7	.6	.8	.6	.6	.5	.4	.4	.7	.7	.6	.8	.6	.5	.4
.4	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	1.0	.6	.4	.5	.6	.4	.4	.4	.4	.7	.6	.4	.6	.5	.4	.4	.4	.4	.5	.5	.5	.6	.6	.4	.5
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.6	.6	.4	.4	.4	.4	.4	.4	.4	.5	.4	.5	.4	.5	.5	.4	.5	.4	.4	.4	.4	.4	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.5	.5	.5	.4	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.4	.4	.4	.4	.5	.5	.5	.5	.6	.8	.7	.6	.5	.4	.4	.4	.4	.5	.4	.5	.7	.8	.7	.6	.6	.8	.9	.8	.8	.8	.6	.6	.6	.5
.9	.9	.8	1.0	.9	.9	1.0	.9	.8	.8	.8	.7	.5	.6	.7	.9	.9	1.2	1.7	2.2	2.3	2.0	1.7	1.4	1.2	1.3	1.5	1.9	1.8	1.8	1.7	1.3	1.1	1.1	1.1	.9
.6	.6	.7	.9	.8	.7	.8	.9	1.0	.9	.7	.7	.7	.7	.8	.9	1.0	1.0	1.0	1.0	1.2	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.3	1.2	1.1	1.0	1.0	1.3	.9	.7

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations



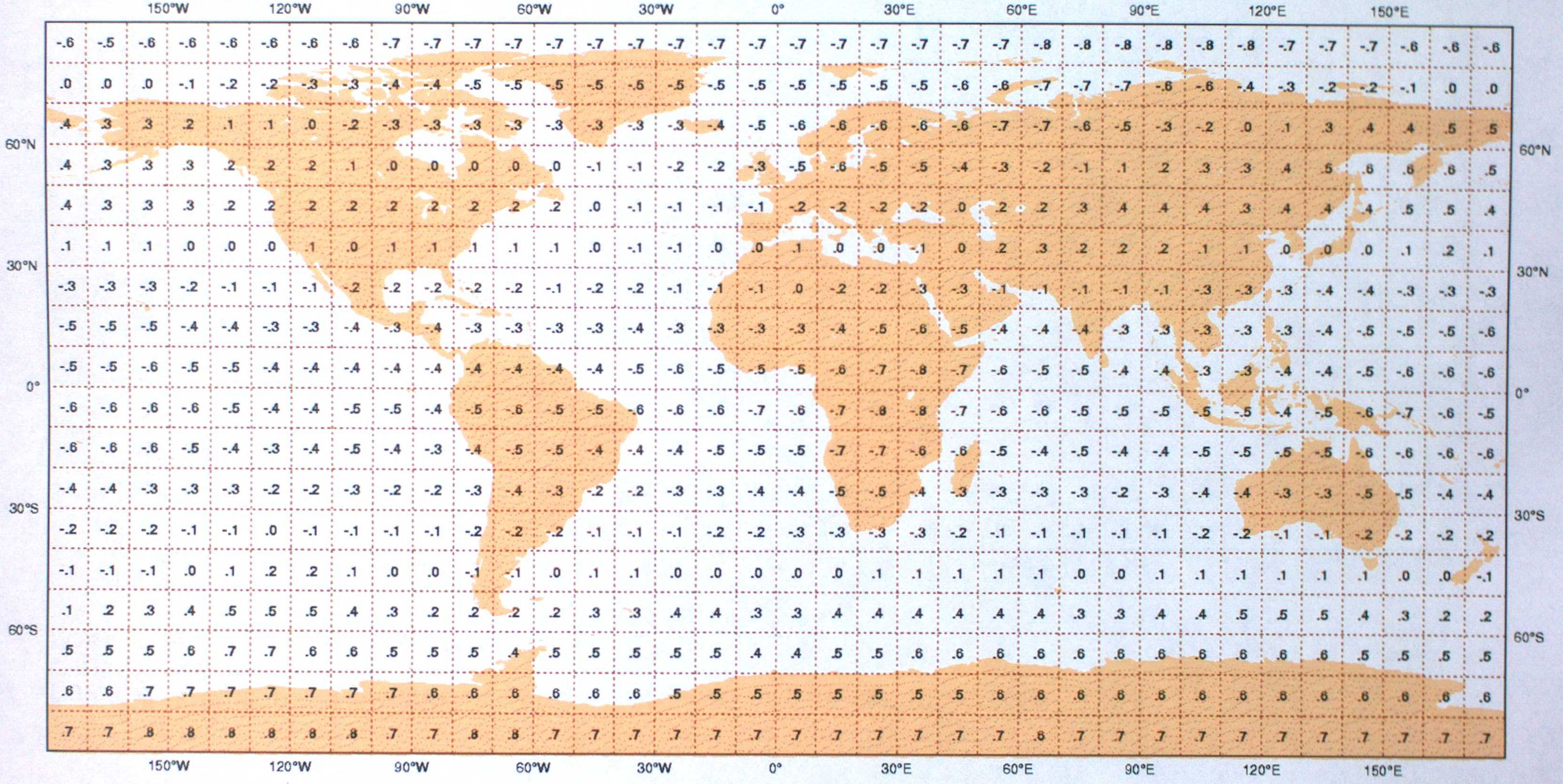
.0	.0	.1	.1	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.3	.3	.3
.5	.6	.5	.5	.4	.4	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.2	.2	.1	.1	.2	.2	.3	.3	.3	.4	.5	.5	.6	.6	.5
.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.2	.2	.1	.1	.2	.2	.2	.2	.3	.4	.5	.5	.5	.6	.6	.7	.7	.7	.6
.5	.5	.5	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.5	.5	.5	.5	.6	.6	.6	.6	.7	.6
.4	.3	.3	.3	.3	.3	.3	.3	.2	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.3	.3	.4	.3	.3	.4	.4	.4
.2	.2	.2	.2	.2	.2	.2	.1	.1	.2	.2	.2	.2	.2	.2	.2	.3	.2	.2	.2	.2	.1	.1	.2	.2	.2	.2	.1	.2	.2	.1	.1	.1	.2	.2	.2
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.0	.0	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.1	.1	.0	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0
.0	.1	.1	.0	.1	.1	.0	.0	.1	.1	.1	.2	.1	.1	.0	.0	.0	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	.1	.1	.1	.0	.0
.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.2	.1	.1	.1	.1	.1	.1	.2	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1
.2	.2	.2	.2	.2	.2	.2	.2	.3	.2	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.2	.2
.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.4	.4	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3
.4	.4	.4	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.4	.4	.4
.5	.5	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6	.5	.6	.6	.6	.6	.6	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.5
.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.7	.6	.6	.6	.6	.7	.7	.7	.7	.6	.6	.6	.6	.6
.8	.7	.7	.7	.7	.8	.8	.8	.9	.8	.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.9	.9	.9	.9	.8	.8	.8	.8	.8	.8	.8	.8	.8

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations



.2	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.3	.3	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.7	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.4	.4	.4	.4	.5	.4	.5	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.5	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.4	.5	.5	.5	.5	.4	.5	.5	.5	.5	.4	.5	.5	.5	.5	.4	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.4	.5	.4	.5	.5	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.4	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.4	.4	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5
.4	.5	.5	.4	.5	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4
.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3
.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations



-.6	-.5	-.6	-.6	-.6	-.6	-.6	-.6	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.8	-.8	-.8	-.8	-.8	-.8	-.7	-.7	-.7	-.6	-.6	-.6
.0	.0	.0	-.1	-.2	-.2	-.3	-.3	-.4	-.4	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.7	-.7	-.7	-.6	-.6	-.4	-.3	-.2	-.2	-.1	.0	.0
.4	.3	.3	.2	.1	.1	.0	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.5	-.6	-.6	-.6	-.6	-.6	-.7	-.7	-.6	-.5	-.3	-.2	.0	.1	.3	.4	.4	.5	.5
.4	.3	.3	.3	.2	.2	.2	.1	.0	.0	.0	.0	.0	-.1	-.1	-.2	-.2	-.3	-.5	-.6	-.5	-.5	-.4	-.3	-.2	-.1	.1	.2	.3	.3	.4	.5	.6	.6	.6	.5
.4	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.0	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	.0	.2	.2	.3	.4	.4	.4	.3	.4	.4	.4	.5	.5	.4
.1	.1	.1	.0	.0	.0	.1	.0	.1	.1	.1	.1	.1	.0	-.1	-.1	.0	.0	.1	.0	.0	-.1	.0	.2	.3	.2	.2	.2	.1	.1	.0	.0	.0	.1	.2	.1
-.3	-.3	-.3	-.2	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.1	-.1	-.1	.0	-.2	-.2	-.3	-.3	-.1	-.1	-.1	-.1	-.1	-.3	-.3	-.3	-.4	-.4	-.3	-.3	-.3
-.5	-.5	-.5	-.4	-.4	-.3	-.3	-.4	-.3	-.4	-.3	-.3	-.3	-.3	-.4	-.3	-.3	-.3	-.3	-.4	-.5	-.6	-.5	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.4	-.5	-.5	-.5	-.6
-.5	-.5	-.6	-.5	-.5	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.5	-.6	-.5	-.5	-.5	-.6	-.7	-.8	-.7	-.6	-.5	-.5	-.4	-.4	-.3	-.3	-.4	-.4	-.5	-.6	-.6	-.6
-.6	-.6	-.6	-.6	-.5	-.4	-.4	-.5	-.5	-.4	-.5	-.6	-.5	-.5	-.6	-.6	-.6	-.7	-.6	-.7	-.8	-.8	-.7	-.6	-.6	-.5	-.5	-.5	-.5	-.5	-.4	-.5	-.6	-.7	-.6	-.5
-.6	-.6	-.6	-.5	-.4	-.3	-.4	-.5	-.4	-.3	-.4	-.5	-.5	-.4	-.4	-.4	-.5	-.5	-.5	-.7	-.7	-.6	-.6	-.5	-.4	-.5	-.4	-.4	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.6
-.4	-.4	-.3	-.3	-.3	-.2	-.2	-.3	-.2	-.2	-.3	-.4	-.3	-.2	-.2	-.3	-.3	-.4	-.4	-.5	-.5	-.4	-.3	-.3	-.3	-.3	-.2	-.3	-.4	-.4	-.3	-.3	-.5	-.5	-.4	-.4
-.2	-.2	-.2	-.1	-.1	.0	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.1	-.1	-.1	-.2	-.2	-.3	-.3	-.3	-.3	-.2	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.1	-.1	-.2	-.2	-.2	-.2
-.1	-.1	-.1	.0	.1	.2	.2	.1	.0	.0	-.1	-.1	.0	.1	.1	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.0	.0	-.1
.1	.2	.3	.4	.5	.5	.5	.4	.3	.2	.2	.2	.2	.3	.3	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.5	.5	.5	.4	.3	.2	.2
.5	.5	.5	.6	.7	.7	.6	.6	.5	.5	.5	.4	.5	.5	.5	.5	.5	.4	.4	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5
.6	.6	.7	.7	.7	.7	.7	.7	.7	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
.7	.7	.8	.8	.8	.8	.8	.8	.7	.7	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

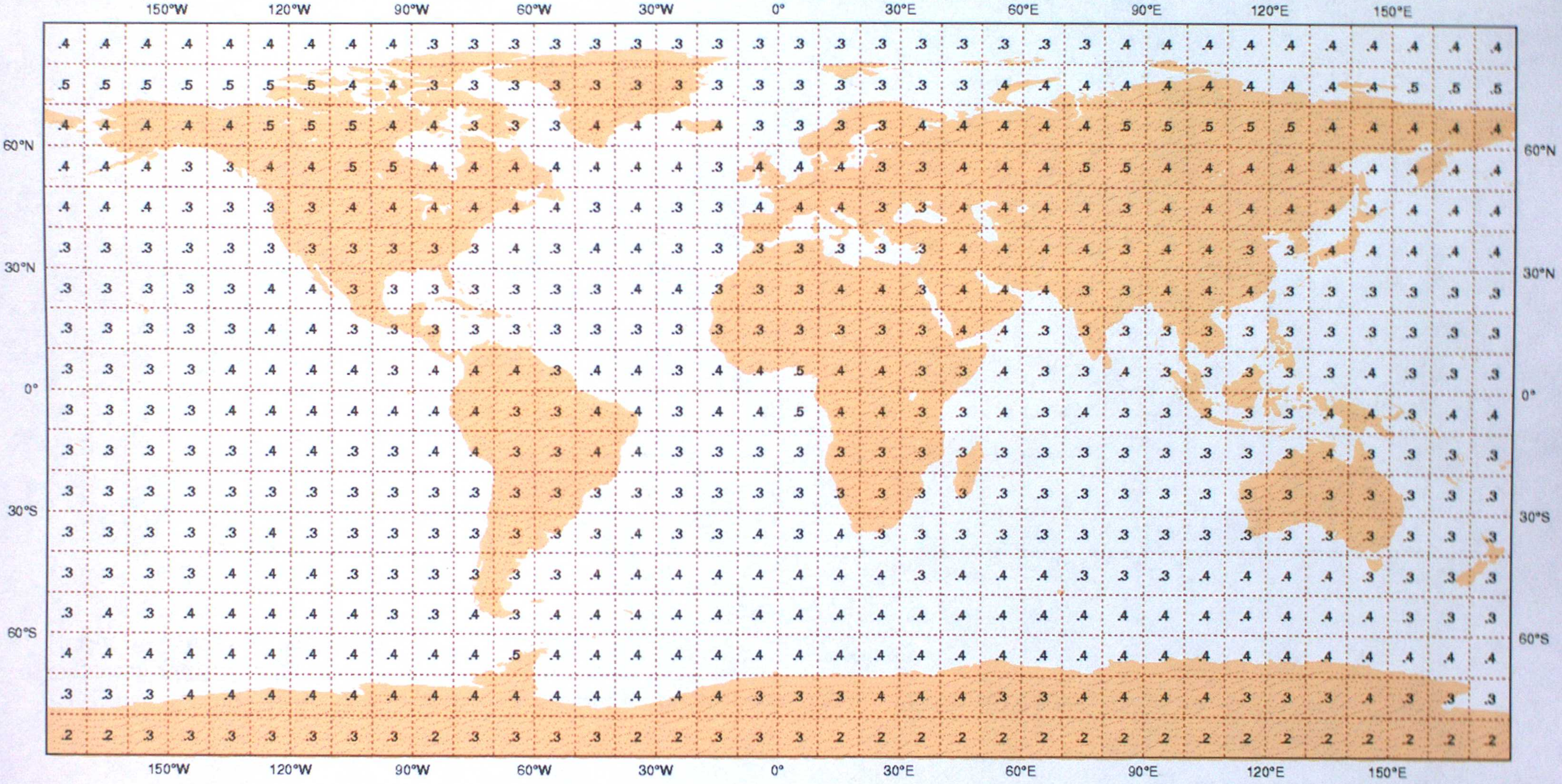
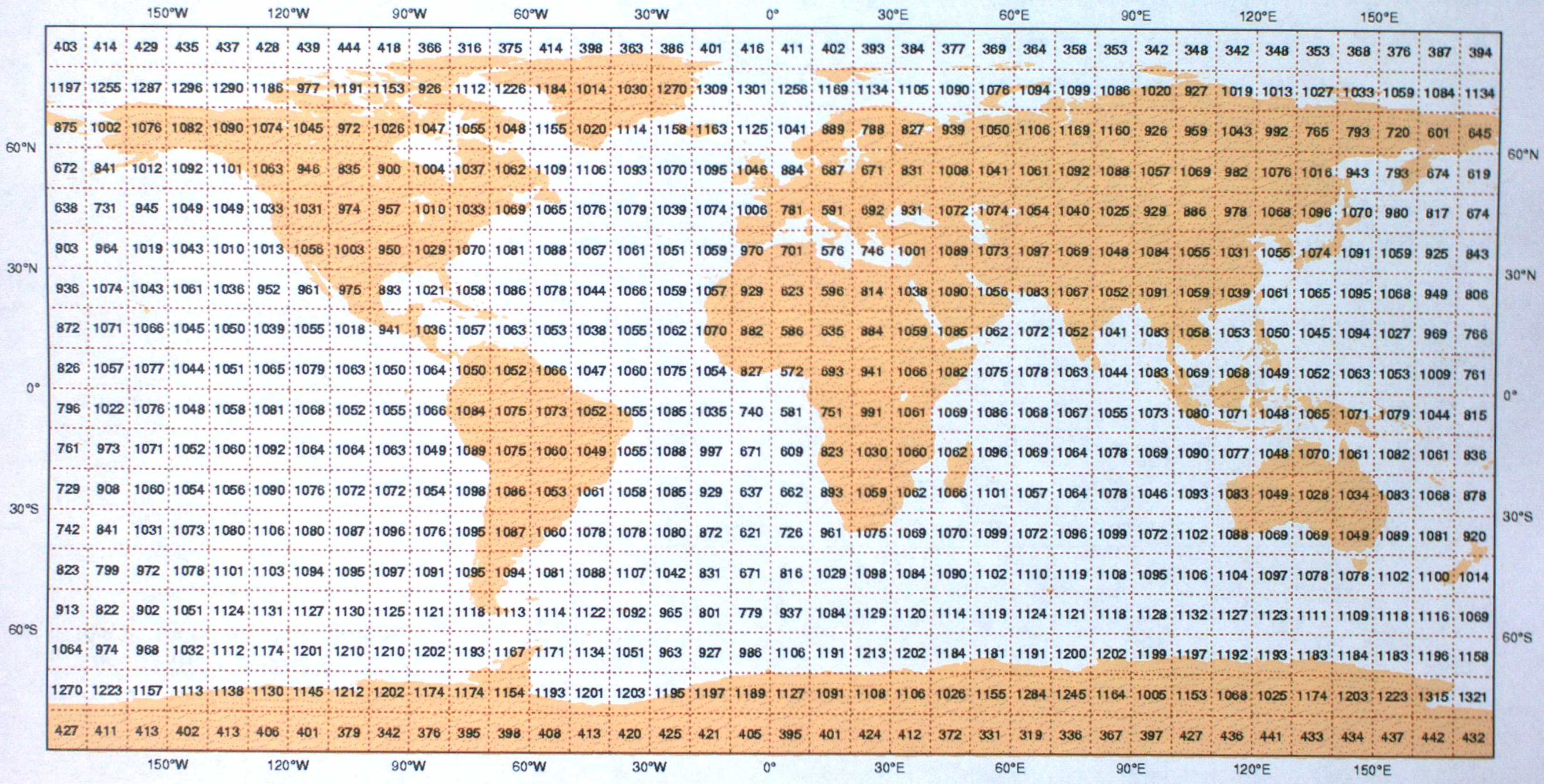
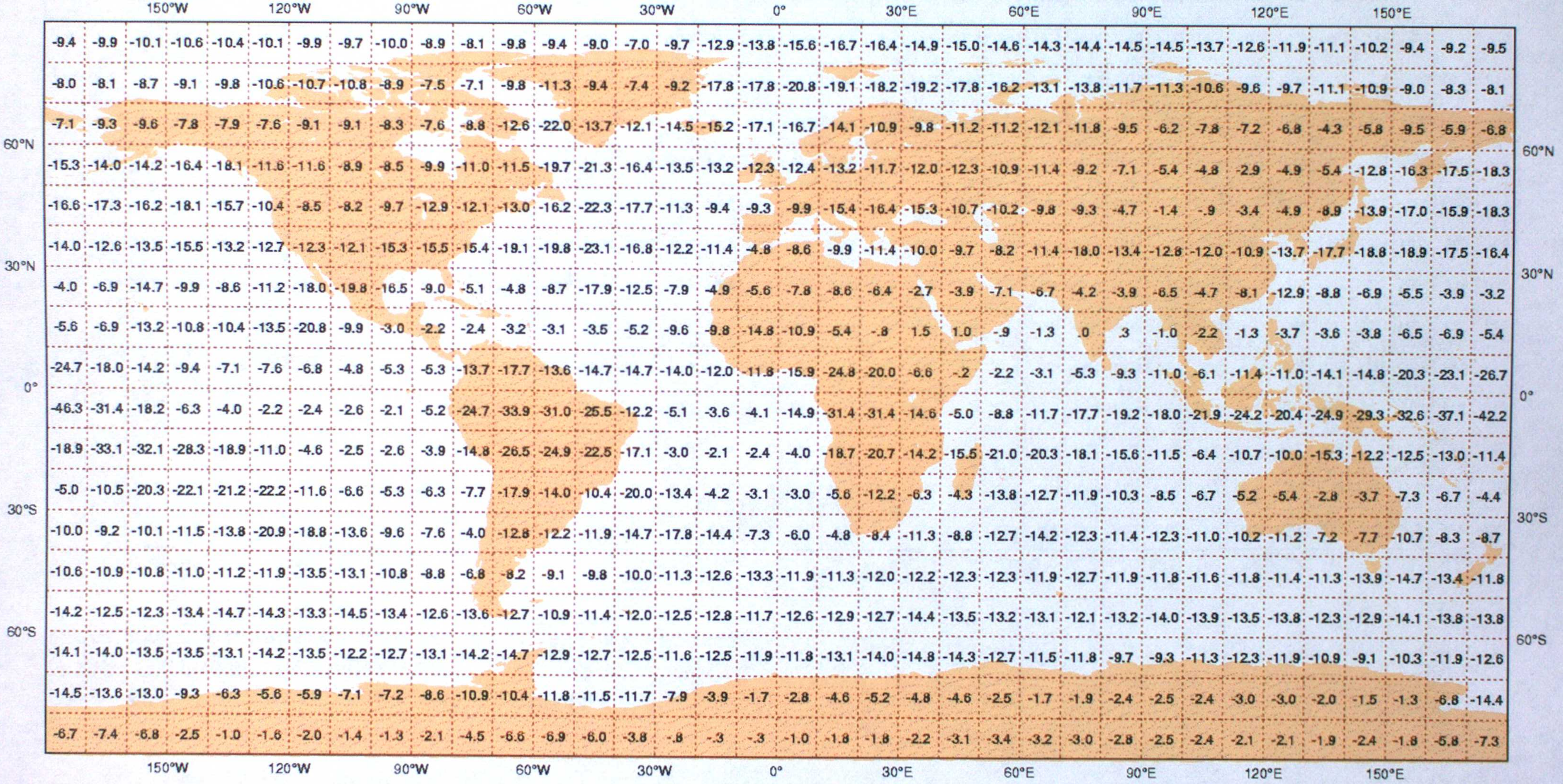

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 40. ATOVS mean daily count. FEBRUARY 2005
NOAA16, using all observations
Global average number of observations in 24 hours = 624443



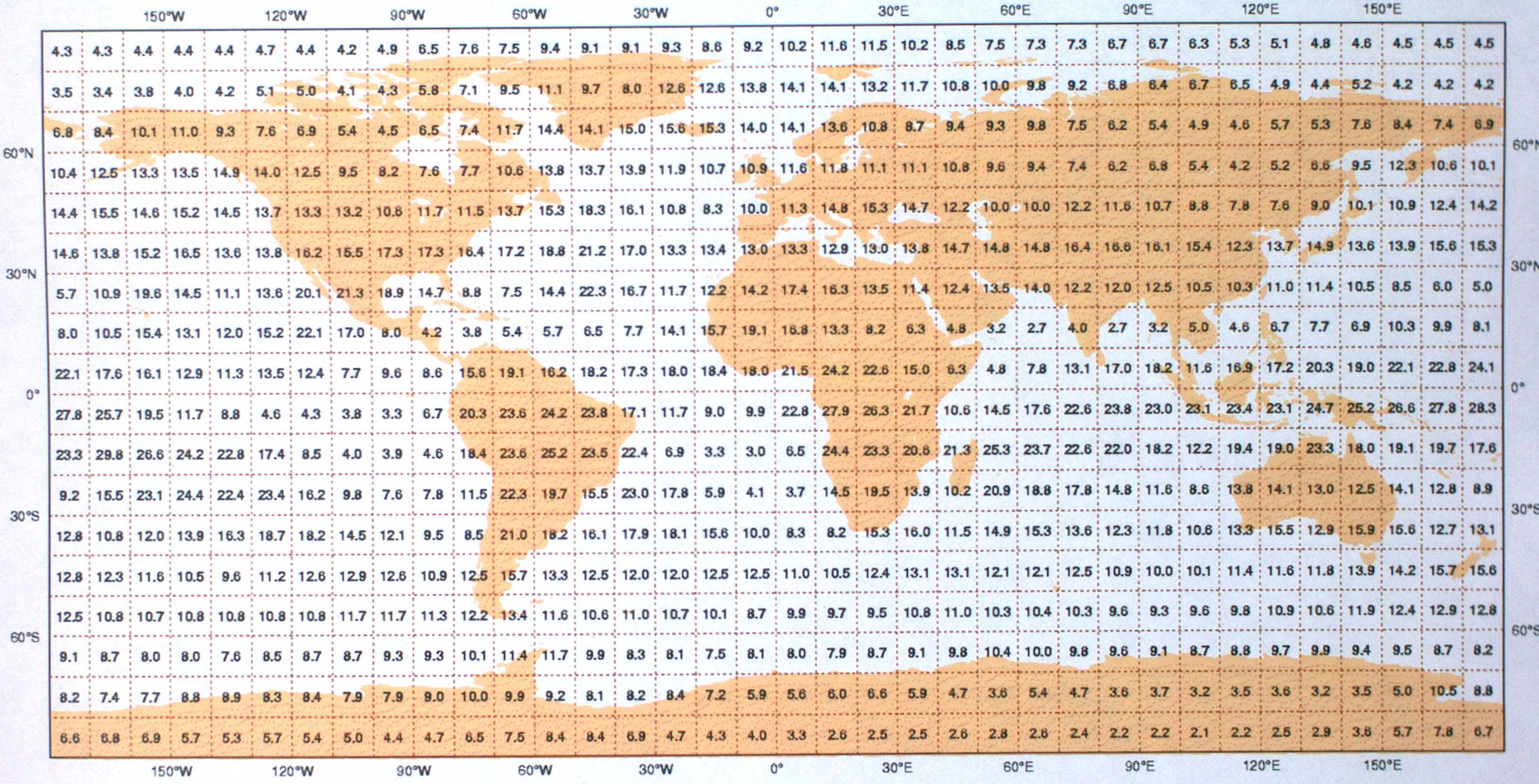
403	414	429	435	437	428	439	444	418	366	316	375	414	398	363	386	401	416	411	402	393	384	377	369	364	358	353	342	348	342	348	353	368	376	387	394
1197	1255	1287	1296	1290	1186	977	1191	1153	926	1112	1226	1184	1014	1030	1270	1309	1301	1256	1169	1134	1105	1090	1076	1094	1099	1086	1020	927	1019	1013	1027	1033	1059	1084	1134
875	1002	1076	1082	1090	1074	1045	972	1026	1047	1055	1048	1155	1020	1114	1158	1163	1125	1041	889	788	827	939	1050	1106	1169	1160	926	959	1043	992	765	793	720	601	645
672	841	1012	1092	1101	1063	946	835	900	1004	1037	1062	1109	1106	1093	1070	1095	1046	884	687	671	831	1008	1041	1061	1092	1088	1057	1069	982	1076	1016	943	793	674	619
638	731	945	1049	1049	1033	1031	974	957	1010	1033	1069	1065	1076	1079	1039	1074	1006	781	591	692	931	1072	1074	1054	1040	1025	929	886	978	1068	1096	1070	980	817	674
903	964	1019	1043	1010	1013	1056	1003	950	1029	1070	1081	1088	1067	1061	1051	1059	970	701	576	746	1001	1089	1073	1097	1069	1048	1084	1055	1031	1055	1074	1091	1059	925	843
936	1074	1043	1061	1036	952	961	975	893	1021	1058	1086	1078	1044	1066	1059	1057	929	623	596	814	1038	1090	1056	1083	1067	1052	1091	1059	1039	1061	1065	1095	1068	949	806
872	1071	1066	1045	1050	1039	1055	1018	941	1036	1057	1063	1053	1038	1055	1062	1070	882	586	635	884	1059	1085	1062	1072	1052	1041	1083	1058	1053	1050	1045	1094	1027	969	766
826	1057	1077	1044	1051	1065	1079	1063	1050	1064	1050	1052	1066	1047	1060	1075	1054	827	572	693	941	1066	1082	1075	1078	1063	1044	1083	1069	1068	1049	1052	1063	1053	1009	761
796	1022	1076	1048	1058	1081	1068	1052	1055	1066	1084	1075	1073	1052	1055	1085	1035	740	581	751	991	1061	1069	1086	1068	1067	1055	1073	1080	1071	1048	1065	1071	1079	1044	815
761	973	1071	1052	1060	1092	1064	1064	1063	1049	1089	1075	1060	1049	1055	1088	997	671	609	823	1030	1060	1062	1096	1069	1064	1078	1069	1090	1077	1048	1070	1061	1082	1061	836
729	908	1060	1054	1056	1090	1076	1072	1072	1054	1098	1086	1053	1061	1058	1085	929	637	662	893	1059	1062	1066	1101	1057	1064	1078	1046	1093	1083	1049	1028	1034	1083	1068	878
742	841	1031	1073	1080	1106	1080	1087	1096	1076	1095	1087	1060	1078	1078	1080	872	621	726	961	1075	1069	1070	1099	1072	1096	1099	1072	1102	1088	1069	1069	1049	1089	1081	920
823	799	972	1078	1101	1103	1094	1095	1097	1091	1095	1094	1081	1088	1107	1042	831	671	816	1029	1098	1084	1090	1102	1110	1119	1108	1095	1106	1104	1097	1078	1078	1102	1100	1014
913	822	902	1051	1124	1131	1127	1130	1125	1121	1118	1113	1114	1122	1092	965	801	779	937	1084	1129	1120	1114	1119	1124	1121	1118	1128	1132	1127	1123	1111	1109	1118	1116	1069
1064	974	968	1032	1112	1174	1201	1210	1210	1202	1193	1167	1171	1134	1051	963	927	986	1106	1191	1213	1202	1184	1181	1191	1200	1202	1199	1197	1192	1193	1183	1184	1183	1196	1158
1270	1223	1157	1113	1138	1130	1145	1212	1202	1174	1174	1154	1193	1201	1203	1195	1197	1189	1127	1091	1108	1106	1026	1155	1284	1245	1164	1005	1153	1068	1025	1174	1203	1223	1315	1321
427	411	413	402	413	406	401	379	342	376	395	398	408	413	420	425	421	405	395	401	424	412	372	331	319	336	367	397	427	436	441	433	434	437	442	432

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS8 (Surface)
NOAA16, using all observations



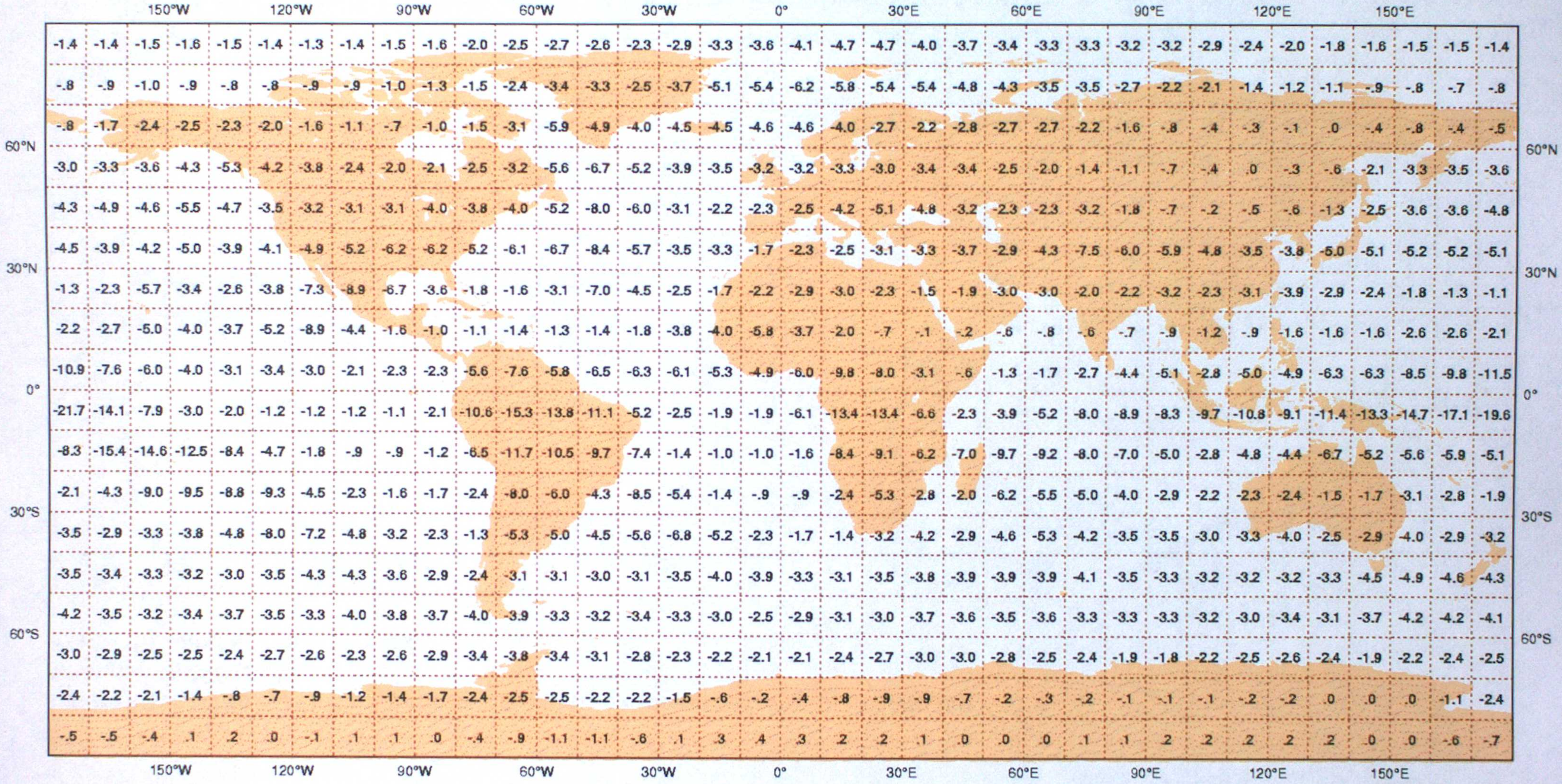
-9.4	-9.9	-10.1	-10.6	-10.4	-10.1	-9.9	-9.7	-10.0	-8.9	-8.1	-9.8	-9.4	-9.0	-7.0	-9.7	-12.9	-13.8	-15.6	-16.7	-16.4	-14.9	-15.0	-14.6	-14.3	-14.4	-14.5	-14.5	-13.7	-12.6	-11.9	-11.1	-10.2	-9.4	-9.2	-9.5
-8.0	-8.1	-8.7	-9.1	-9.8	-10.6	-10.7	-10.8	-8.9	-7.5	-7.1	-9.8	-11.3	-9.4	-7.4	-9.2	-17.8	-17.8	-20.8	-19.1	-18.2	-19.2	-17.8	-16.2	-13.1	-13.8	-11.7	-11.3	-10.6	-9.6	-9.7	-11.1	-10.9	-9.0	-8.3	-8.1
-7.1	-9.3	-9.6	-7.8	-7.9	-7.6	-9.1	-9.1	-8.3	-7.6	-8.8	-12.6	-22.0	-13.7	-12.1	-14.5	-15.2	-17.1	-16.7	-14.1	-10.9	-9.8	-11.2	-11.2	-12.1	-11.8	-9.5	-6.2	-7.8	-7.2	-6.8	-4.3	-5.8	-9.5	-5.9	-6.8
-15.3	-14.0	-14.2	-16.4	-18.1	-11.6	-11.6	-8.9	-8.5	-9.9	-11.0	-11.5	-19.7	-21.3	-16.4	-13.5	-13.2	-12.3	-12.4	-13.2	-11.7	-12.0	-12.3	-10.9	-11.4	-9.2	-7.1	-5.4	-4.8	-2.9	-4.9	-5.4	-12.8	-16.3	-17.5	-18.3
-16.6	-17.3	-16.2	-18.1	-15.7	-10.4	-8.5	-8.2	-9.7	-12.9	-12.1	-13.0	-16.2	-22.3	-17.7	-11.3	-9.4	-9.3	-9.9	-15.4	-16.4	-15.3	-10.7	-10.2	-9.8	-9.3	-4.7	-1.4	-.9	-3.4	-4.9	-8.9	-13.9	-17.0	-15.9	-18.3
-14.0	-12.6	-13.5	-15.5	-13.2	-12.7	-12.3	-12.1	-15.3	-15.5	-15.4	-19.1	-19.8	-23.1	-16.8	-12.2	-11.4	-4.8	-8.6	-9.9	-11.4	-10.0	-9.7	-8.2	-11.4	-18.0	-13.4	-12.8	-12.0	-10.9	-13.7	-17.7	-18.8	-18.9	-17.5	-16.4
-4.0	-6.9	-14.7	-9.9	-8.6	-11.2	-18.0	-19.8	-16.5	-9.0	-5.1	-4.8	-8.7	-17.9	-12.5	-7.9	-4.9	-5.6	-7.8	-8.6	-6.4	-2.7	-3.9	-7.1	-6.7	-4.2	-3.9	-6.5	-4.7	-8.1	-12.9	-8.8	-6.9	-5.5	-3.9	-3.2
-5.6	-6.9	-13.2	-10.8	-10.4	-13.5	-20.8	-9.9	-3.0	-2.2	-2.4	-3.2	-3.1	-3.5	-5.2	-9.6	-9.8	-14.8	-10.9	-5.4	-.8	1.5	1.0	-.9	-1.3	.0	.3	-1.0	-2.2	-1.3	-3.7	-3.6	-3.8	-6.5	-6.9	-5.4
-24.7	-18.0	-14.2	-9.4	-7.1	-7.6	-6.8	-4.8	-5.3	-5.3	-13.7	-17.7	-13.6	-14.7	-14.7	-14.0	-12.0	-11.8	-15.9	-24.8	-20.0	-6.6	-.2	-2.2	-3.1	-5.3	-9.3	-11.0	-6.1	-11.4	-11.0	-14.1	-14.8	-20.3	-23.1	-26.7
-46.3	-31.4	-18.2	-6.3	-4.0	-2.2	-2.4	-2.6	-2.1	-5.2	-24.7	-33.9	-31.0	-25.5	-12.2	-5.1	-3.6	-4.1	-14.9	-31.4	-31.4	-14.6	-5.0	-8.8	-11.7	-17.7	-19.2	-18.0	-21.9	-24.2	-20.4	-24.9	-29.3	-32.6	-37.1	-42.2
-18.9	-33.1	-32.1	-28.3	-18.9	-11.0	-4.6	-2.5	-2.6	-3.9	-14.8	-26.5	-24.9	-22.5	-17.1	-3.0	-2.1	-2.4	-4.0	-18.7	-20.7	-14.2	-15.5	-21.0	-20.3	-18.1	-15.6	-11.5	-6.4	-10.7	-10.0	-15.3	-12.2	-12.5	-13.0	-11.4
-5.0	-10.5	-20.3	-22.1	-21.2	-22.2	-11.6	-6.6	-5.3	-6.3	-7.7	-17.9	-14.0	-10.4	-20.0	-13.4	-4.2	-3.1	-3.0	-5.6	-12.2	-6.3	-4.3	-13.8	-12.7	-11.9	-10.3	-8.5	-6.7	-5.2	-5.4	-2.8	-3.7	-7.3	-6.7	-4.4
-10.0	-9.2	-10.1	-11.5	-13.8	-20.9	-18.8	-13.6	-9.6	-7.6	-4.0	-12.8	-12.2	-11.9	-14.7	-17.8	-14.4	-7.3	-6.0	-4.8	-8.4	-11.3	-8.8	-12.7	-14.2	-12.3	-11.4	-12.3	-11.0	-10.2	-11.2	-7.2	-7.7	-10.7	-8.3	-8.7
-10.6	-10.9	-10.8	-11.0	-11.2	-11.9	-13.5	-13.1	-10.8	-8.8	-6.8	-8.2	-9.1	-9.8	-10.0	-11.3	-12.6	-13.3	-11.9	-11.3	-12.0	-12.2	-12.3	-12.3	-11.9	-12.7	-11.9	-11.8	-11.6	-11.8	-11.4	-11.3	-13.9	-14.7	-13.4	-11.8
-14.2	-12.5	-12.3	-13.4	-14.7	-14.3	-13.3	-14.5	-13.4	-12.6	-13.6	-12.7	-10.9	-11.4	-12.0	-12.5	-12.8	-11.7	-12.6	-12.9	-12.7	-14.4	-13.5	-13.2	-13.1	-12.1	-13.2	-14.0	-13.9	-13.5	-13.8	-12.3	-12.9	-14.1	-13.8	-13.8
-14.1	-14.0	-13.5	-13.5	-13.1	-14.2	-13.5	-12.2	-12.7	-13.1	-14.2	-14.7	-12.9	-12.7	-12.5	-11.6	-12.5	-11.9	-11.8	-13.1	-14.0	-14.8	-14.3	-12.7	-11.5	-11.8	-9.7	-9.3	-11.3	-12.3	-11.9	-10.9	-9.1	-10.3	-11.9	-12.6
-14.5	-13.6	-13.0	-9.3	-6.3	-5.6	-5.9	-7.1	-7.2	-8.6	-10.9	-10.4	-11.8	-11.5	-11.7	-7.9	-3.9	-1.7	-2.8	-4.6	-5.2	-4.8	-4.6	-2.5	-1.7	-1.9	-2.4	-2.5	-2.4	-3.0	-3.0	-2.0	-1.5	-1.3	-6.8	-14.4
-6.7	-7.4	-6.8	-2.5	-1.0	-1.6	-2.0	-1.4	-1.3	-2.1	-4.5	-6.6	-6.9	-6.0	-3.8	-.8	-.3	-.3	-1.0	-1.8	-1.8	-2.2	-3.1	-3.4	-3.2	-3.0	-2.8	-2.5	-2.4	-2.1	-2.1	-1.9	-2.4	-1.8	-5.8	-7.3

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS8 (Surface)
NOAA16, using all observations



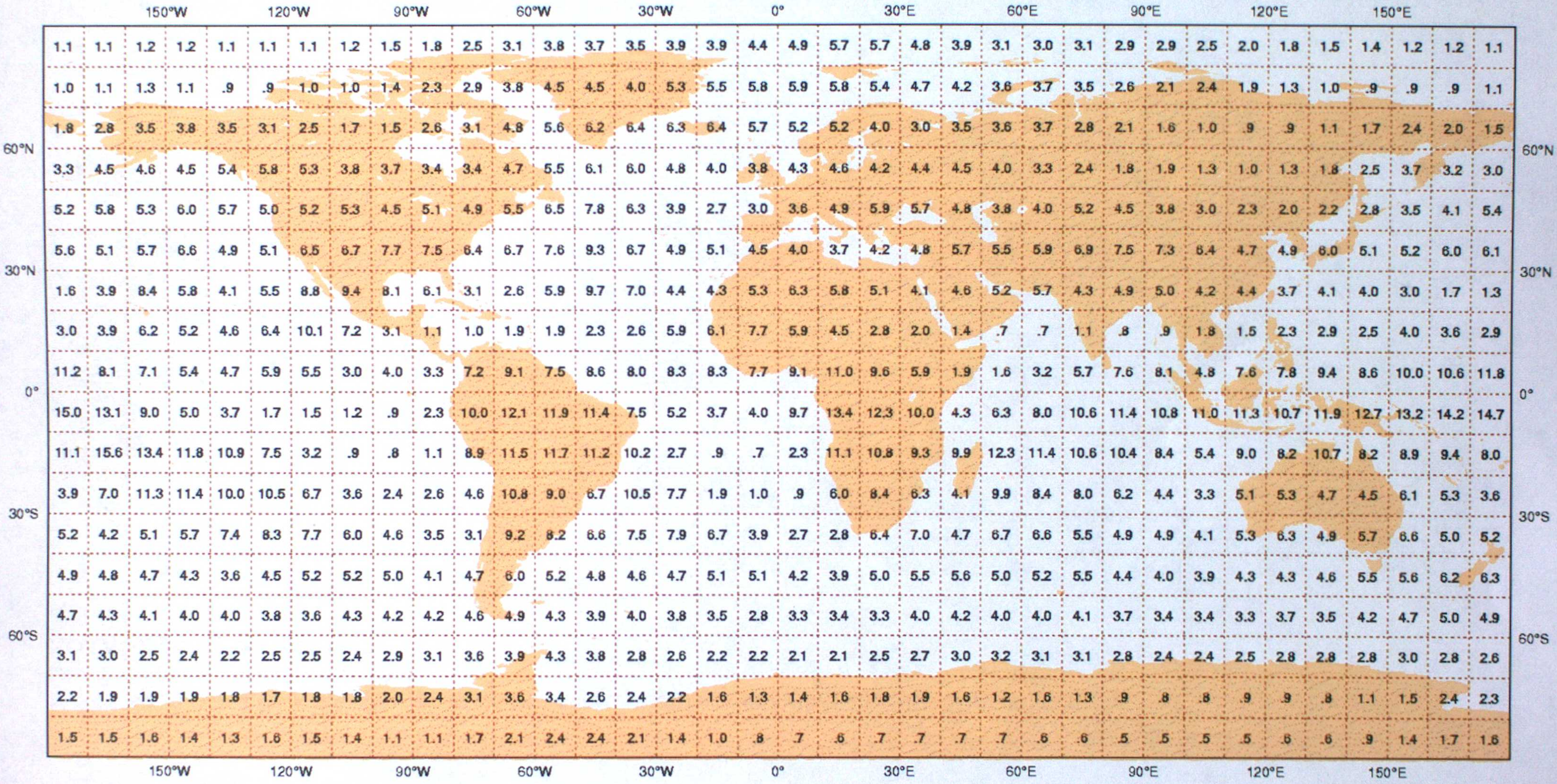
4.3	4.3	4.4	4.4	4.4	4.7	4.4	4.2	4.9	6.5	7.6	7.5	9.4	9.1	9.1	9.3	8.6	9.2	10.2	11.6	11.5	10.2	8.5	7.5	7.3	7.3	6.7	6.7	6.3	5.3	5.1	4.8	4.6	4.5	4.5	4.5
3.5	3.4	3.8	4.0	4.2	5.1	5.0	4.1	4.3	5.8	7.1	9.5	11.1	9.7	8.0	12.6	12.6	13.8	14.1	14.1	13.2	11.7	10.8	10.0	9.8	9.2	6.8	6.4	6.7	6.5	4.9	4.4	5.2	4.2	4.2	4.2
6.8	8.4	10.1	11.0	9.3	7.6	6.9	5.4	4.5	6.5	7.4	11.7	14.4	14.1	15.0	15.6	15.3	14.0	14.1	13.6	10.8	8.7	9.4	9.3	9.8	7.5	6.2	5.4	4.9	4.6	5.7	5.3	7.6	8.4	7.4	6.9
10.4	12.5	13.3	13.5	14.9	14.0	12.5	9.5	8.2	7.6	7.7	10.6	13.8	13.7	13.9	11.9	10.7	10.9	11.6	11.8	11.1	11.1	10.8	9.6	9.4	7.4	6.2	6.8	5.4	4.2	5.2	6.6	9.5	12.3	10.6	10.1
14.4	15.5	14.6	15.2	14.5	13.7	13.3	13.2	10.6	11.7	11.5	13.7	15.3	18.3	16.1	10.8	8.3	10.0	11.3	14.8	15.3	14.7	12.2	10.0	10.0	12.2	11.6	10.7	8.8	7.8	7.6	9.0	10.1	10.9	12.4	14.2
14.6	13.8	15.2	16.5	13.6	13.8	16.2	15.5	17.3	17.3	16.4	17.2	18.8	21.2	17.0	13.3	13.4	13.0	13.3	12.9	13.0	13.8	14.7	14.8	14.8	16.4	16.6	16.1	15.4	12.3	13.7	14.9	13.6	13.9	15.6	15.3
5.7	10.9	19.6	14.5	11.1	13.6	20.1	21.3	18.9	14.7	8.8	7.5	14.4	22.3	16.7	11.7	12.2	14.2	17.4	16.3	13.5	11.4	12.4	13.5	14.0	12.2	12.0	12.5	10.5	10.3	11.0	11.4	10.5	8.5	6.0	5.0
8.0	10.5	15.4	13.1	12.0	15.2	22.1	17.0	8.0	4.2	3.8	5.4	5.7	6.5	7.7	14.1	15.7	19.1	16.8	13.3	8.2	6.3	4.8	3.2	2.7	4.0	2.7	3.2	5.0	4.6	6.7	7.7	6.9	10.3	9.9	8.1
22.1	17.6	16.1	12.9	11.3	13.5	12.4	7.7	9.6	8.6	15.6	19.1	16.2	18.2	17.3	18.0	18.4	18.0	21.5	24.2	22.6	15.0	6.3	4.8	7.8	13.1	17.0	18.2	11.6	16.9	17.2	20.3	19.0	22.1	22.8	24.1
27.8	25.7	19.5	11.7	8.8	4.6	4.3	3.8	3.3	6.7	20.3	23.6	24.2	23.8	17.1	11.7	9.0	9.9	22.8	27.9	26.3	21.7	10.6	14.5	17.6	22.6	23.8	23.0	23.1	23.4	23.1	24.7	25.2	26.6	27.8	28.3
23.3	29.8	26.6	24.2	22.8	17.4	8.5	4.0	3.9	4.6	18.4	23.6	25.2	23.5	22.4	6.9	3.3	3.0	6.5	24.4	23.3	20.6	21.3	25.3	23.7	22.6	22.0	18.2	12.2	19.4	19.0	23.3	18.0	19.1	19.7	17.6
9.2	15.5	23.1	24.4	22.4	23.4	16.2	9.8	7.6	7.8	11.5	22.3	19.7	15.5	23.0	17.8	5.9	4.1	3.7	14.5	19.5	13.9	10.2	20.9	18.8	17.8	14.8	11.6	8.6	13.8	14.1	13.0	12.5	14.1	12.8	8.9
12.8	10.8	12.0	13.9	16.3	18.7	18.2	14.5	12.1	9.5	8.5	21.0	18.2	16.1	17.9	18.1	15.6	10.0	8.3	8.2	15.3	16.0	11.5	14.9	15.3	13.6	12.3	11.8	10.6	13.3	15.5	12.9	15.9	15.6	12.7	13.1
12.8	12.3	11.6	10.5	9.6	11.2	12.6	12.9	12.6	10.9	12.5	15.7	13.3	12.5	12.0	12.0	12.5	12.5	11.0	10.5	12.4	13.1	13.1	12.1	12.1	12.5	10.9	10.0	10.1	11.4	11.6	11.8	13.9	14.2	15.7	15.6
12.5	10.8	10.7	10.8	10.8	10.8	10.8	11.7	11.7	11.3	12.2	13.4	11.6	10.6	11.0	10.7	10.1	8.7	9.9	9.7	9.5	10.8	11.0	10.3	10.4	10.3	9.6	9.3	9.6	9.8	10.9	10.6	11.9	12.4	12.9	12.8
9.1	8.7	8.0	8.0	7.6	8.5	8.7	8.7	9.3	9.3	10.1	11.4	11.7	9.9	8.3	8.1	7.5	8.1	8.0	7.9	8.7	9.1	9.8	10.4	10.0	9.8	9.6	9.1	8.7	8.8	9.7	9.9	9.4	9.5	8.7	8.2
8.2	7.4	7.7	8.8	8.9	8.3	8.4	7.9	7.9	9.0	10.0	9.9	9.2	8.1	8.2	8.4	7.2	5.9	5.6	6.0	6.6	5.9	4.7	3.6	5.4	4.7	3.6	3.7	3.2	3.5	3.6	3.2	3.5	5.0	10.5	8.8
6.6	6.8	6.9	5.7	5.3	5.7	5.4	5.0	4.4	4.7	6.5	7.5	8.4	8.4	6.9	4.7	4.3	4.0	3.3	2.6	2.5	2.5	2.6	2.8	2.6	2.4	2.2	2.2	2.1	2.2	2.5	2.9	3.6	5.7	7.8	6.7

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



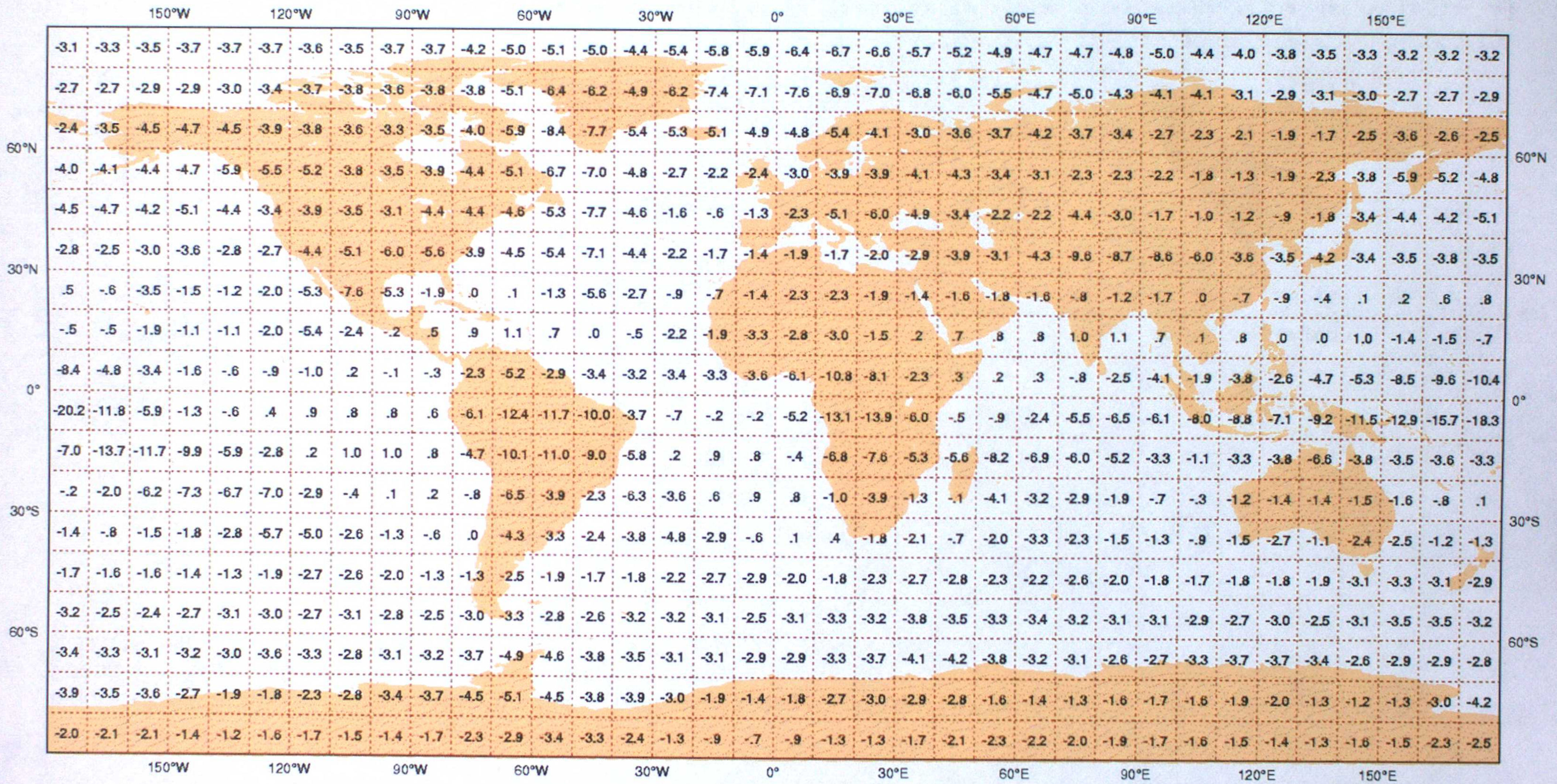
-1.4	-1.4	-1.5	-1.6	-1.5	-1.4	-1.3	-1.4	-1.5	-1.6	-2.0	-2.5	-2.7	-2.6	-2.3	-2.9	-3.3	-3.6	-4.1	-4.7	-4.7	-4.0	-3.7	-3.4	-3.3	-3.3	-3.2	-3.2	-2.9	-2.4	-2.0	-1.8	-1.6	-1.5	-1.5	-1.4
-.8	-.9	-1.0	-.9	-.8	-.8	-.9	-.9	-1.0	-1.3	-1.5	-2.4	-3.4	-3.3	-2.5	-3.7	-5.1	-5.4	-6.2	-5.8	-5.4	-5.4	-4.8	-4.3	-3.5	-3.5	-2.7	-2.2	-2.1	-1.4	-1.2	-1.1	-.9	-.8	-.7	-.8
-.8	-1.7	-2.4	-2.5	-2.3	-2.0	-1.6	-1.1	-.7	-1.0	-1.5	-3.1	-5.9	-4.9	-4.0	-4.5	-4.5	-4.6	-4.6	-4.0	-2.7	-2.2	-2.8	-2.7	-2.7	-2.2	-1.6	-.8	-.4	-.3	-.1	.0	-.4	-.8	-.4	-.5
-3.0	-3.3	-3.6	-4.3	-5.3	-4.2	-3.8	-2.4	-2.0	-2.1	-2.5	-3.2	-5.6	-6.7	-5.2	-3.9	-3.5	-3.2	-3.2	-3.3	-3.0	-3.4	-3.4	-2.5	-2.0	-1.4	-1.1	-.7	-.4	.0	-.3	-.6	-2.1	-3.3	-3.5	-3.6
-4.3	-4.9	-4.6	-5.5	-4.7	-3.5	-3.2	-3.1	-3.1	-4.0	-3.8	-4.0	-5.2	-8.0	-6.0	-3.1	-2.2	-2.3	-2.5	-4.2	-5.1	-4.8	-3.2	-2.3	-2.3	-3.2	-1.8	-.7	-.2	-.5	-.6	-1.3	-2.5	-3.6	-3.6	-4.8
-4.5	-3.9	-4.2	-5.0	-3.9	-4.1	-4.9	-5.2	-6.2	-6.2	-5.2	-6.1	-6.7	-8.4	-5.7	-3.5	-3.3	-1.7	-2.3	-2.5	-3.1	-3.3	-3.7	-2.9	-4.3	-7.5	-6.0	-5.9	-4.8	-3.5	-3.8	-5.0	-5.1	-5.2	-5.2	-5.1
-1.3	-2.3	-5.7	-3.4	-2.6	-3.8	-7.3	-8.9	-6.7	-3.6	-1.8	-1.6	-3.1	-7.0	-4.5	-2.5	-1.7	-2.2	-2.9	-3.0	-2.3	-1.5	-1.9	-3.0	-3.0	-2.0	-2.2	-3.2	-2.3	-3.1	-3.9	-2.9	-2.4	-1.8	-1.3	-1.1
-2.2	-2.7	-5.0	-4.0	-3.7	-5.2	-8.9	-4.4	-1.6	-1.0	-1.1	-1.4	-1.3	-1.4	-1.8	-3.8	-4.0	-5.8	-3.7	-2.0	-.7	-.1	-.2	-.6	-.8	-.6	-.7	-.9	-1.2	-.9	-1.6	-1.6	-1.6	-2.6	-2.6	-2.1
-10.9	-7.6	-6.0	-4.0	-3.1	-3.4	-3.0	-2.1	-2.3	-2.3	-5.6	-7.6	-5.8	-6.5	-6.3	-6.1	-5.3	-4.9	-6.0	-9.8	-8.0	-3.1	-.6	-1.3	-1.7	-2.7	-4.4	-5.1	-2.8	-5.0	-4.9	-6.3	-6.3	-8.5	-9.8	-11.5
-21.7	-14.1	-7.9	-3.0	-2.0	-1.2	-1.2	-1.2	-1.1	-2.1	-10.6	-15.3	-13.8	-11.1	-5.2	-2.5	-1.9	-1.9	-6.1	-13.4	-13.4	-6.6	-2.3	-3.9	-5.2	-8.0	-8.9	-8.3	-9.7	-10.8	-9.1	-11.4	-13.3	-14.7	-17.1	-19.6
-8.3	-15.4	-14.6	-12.5	-8.4	-4.7	-1.8	-.9	-.9	-1.2	-6.5	-11.7	-10.5	-9.7	-7.4	-1.4	-1.0	-1.0	-1.6	-8.4	-9.1	-6.2	-7.0	-9.7	-9.2	-8.0	-7.0	-5.0	-2.8	-4.8	-4.4	-6.7	-5.2	-5.6	-5.9	-5.1
-2.1	-4.3	-9.0	-9.5	-8.8	-9.3	-4.5	-2.3	-1.6	-1.7	-2.4	-8.0	-6.0	-4.3	-8.5	-5.4	-1.4	-.9	-.9	-2.4	-5.3	-2.8	-2.0	-6.2	-5.5	-5.0	-4.0	-2.9	-2.2	-2.3	-2.4	-1.5	-1.7	-3.1	-2.8	-1.9
-3.5	-2.9	-3.3	-3.8	-4.8	-8.0	-7.2	-4.8	-3.2	-2.3	-1.3	-5.3	-5.0	-4.5	-5.6	-6.8	-5.2	-2.3	-1.7	-1.4	-3.2	-4.2	-2.9	-4.6	-5.3	-4.2	-3.5	-3.5	-3.0	-3.3	-4.0	-2.5	-2.9	-4.0	-2.9	-3.2
-3.5	-3.4	-3.3	-3.2	-3.0	-3.5	-4.3	-4.3	-3.6	-2.9	-2.4	-3.1	-3.1	-3.0	-3.1	-3.5	-4.0	-3.9	-3.3	-3.1	-3.5	-3.8	-3.9	-3.9	-3.9	-4.1	-3.5	-3.3	-3.2	-3.2	-3.2	-3.3	-4.5	-4.9	-4.6	-4.3
-4.2	-3.5	-3.2	-3.4	-3.7	-3.5	-3.3	-4.0	-3.8	-3.7	-4.0	-3.9	-3.3	-3.2	-3.4	-3.3	-3.0	-2.5	-2.9	-3.1	-3.0	-3.7	-3.6	-3.5	-3.6	-3.3	-3.3	-3.3	-3.2	-3.0	-3.4	-3.1	-3.7	-4.2	-4.2	-4.1
-3.0	-2.9	-2.5	-2.5	-2.4	-2.7	-2.6	-2.3	-2.6	-2.9	-3.4	-3.8	-3.4	-3.1	-2.8	-2.3	-2.2	-2.1	-2.1	-2.4	-2.7	-3.0	-3.0	-2.8	-2.5	-2.4	-1.9	-1.8	-2.2	-2.5	-2.6	-2.4	-1.9	-2.2	-2.4	-2.5
-2.4	-2.2	-2.1	-1.4	-.8	-.7	-.9	-1.2	-1.4	-1.7	-2.4	-2.5	-2.5	-2.2	-2.2	-1.5	-.6	-.2	-.4	-.8	-.9	-.9	-.7	-.2	-.3	-.2	-.1	-.1	-.1	-.2	-.2	.0	.0	.0	-1.1	-2.4
-.5	-.5	-.4	.1	.2	.0	-.1	.1	.1	.0	-.4	-.9	-1.1	-1.1	-.6	.1	.3	.4	.3	.2	.2	.1	.0	.0	.0	.1	.1	.2	.2	.2	.2	.2	.0	.0	-.6	-.7

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



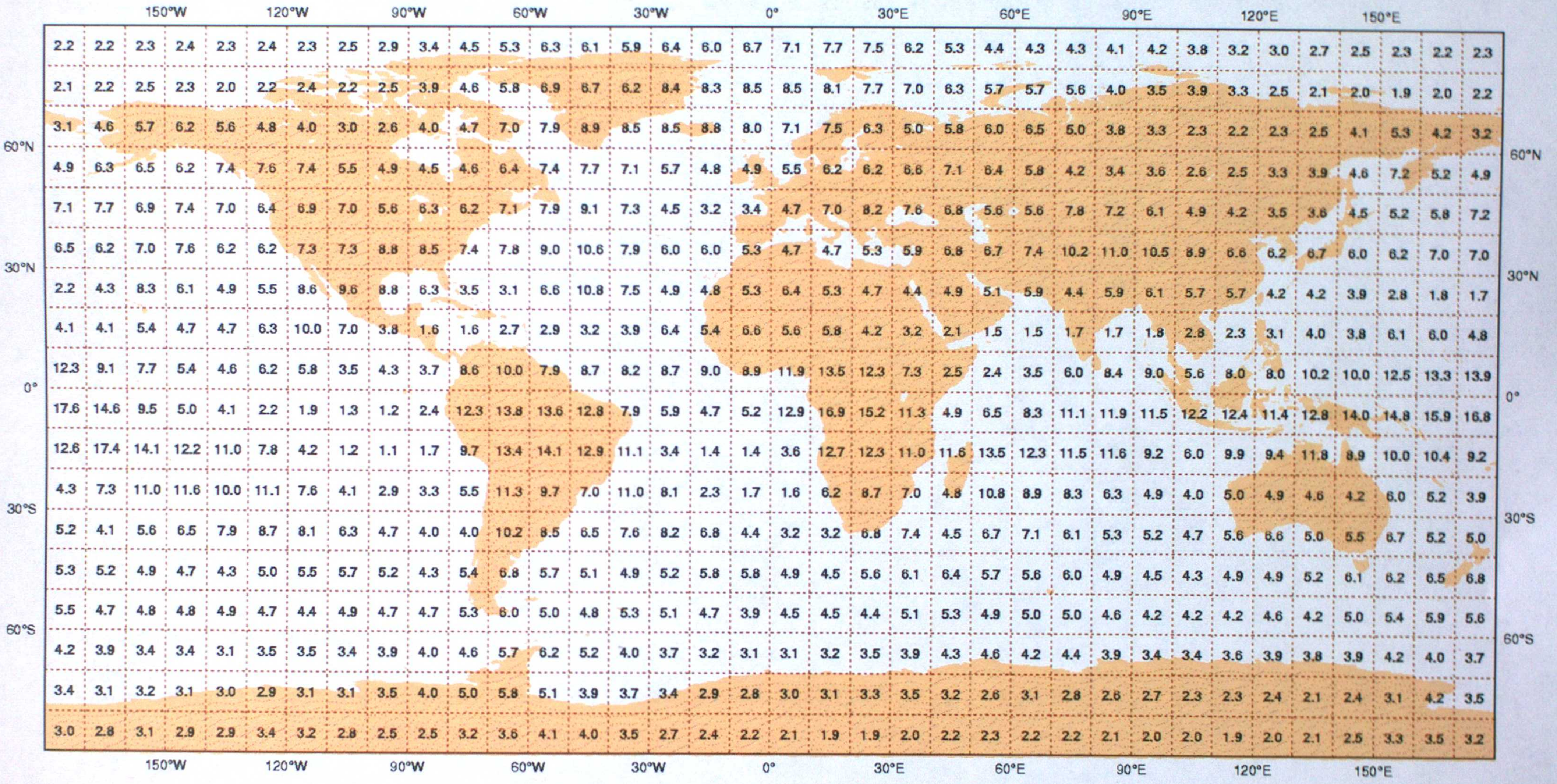
1.1	1.1	1.2	1.2	1.1	1.1	1.1	1.2	1.5	1.8	2.5	3.1	3.8	3.7	3.5	3.9	3.9	4.4	4.9	5.7	5.7	4.8	3.9	3.1	3.0	3.1	2.9	2.9	2.5	2.0	1.8	1.5	1.4	1.2	1.2	1.1
1.0	1.1	1.3	1.1	.9	.9	1.0	1.0	1.4	2.3	2.9	3.8	4.5	4.5	4.0	5.3	5.5	5.8	5.9	5.8	5.4	4.7	4.2	3.6	3.7	3.5	2.6	2.1	2.4	1.9	1.3	1.0	.9	.9	.9	1.1
1.8	2.8	3.5	3.8	3.5	3.1	2.5	1.7	1.5	2.6	3.1	4.8	5.6	6.2	6.4	6.3	6.4	5.7	5.2	5.2	4.0	3.0	3.5	3.6	3.7	2.8	2.1	1.6	1.0	.9	.9	1.1	1.7	2.4	2.0	1.5
3.3	4.5	4.6	4.5	5.4	5.8	5.3	3.8	3.7	3.4	3.4	4.7	5.5	6.1	6.0	4.8	4.0	3.8	4.3	4.6	4.2	4.4	4.5	4.0	3.3	2.4	1.8	1.9	1.3	1.0	1.3	1.8	2.5	3.7	3.2	3.0
5.2	5.8	5.3	6.0	5.7	5.0	5.2	5.3	4.5	5.1	4.9	5.5	6.5	7.8	6.3	3.9	2.7	3.0	3.6	4.9	5.9	5.7	4.8	3.8	4.0	5.2	4.5	3.8	3.0	2.3	2.0	2.2	2.8	3.5	4.1	5.4
5.6	5.1	5.7	6.6	4.9	5.1	6.5	6.7	7.7	7.5	6.4	6.7	7.6	9.3	6.7	4.9	5.1	4.5	4.0	3.7	4.2	4.8	5.7	5.5	5.9	6.9	7.5	7.3	6.4	4.7	4.9	6.0	5.1	5.2	6.0	6.1
1.6	3.9	8.4	5.8	4.1	5.5	8.8	9.4	8.1	6.1	3.1	2.6	5.9	9.7	7.0	4.4	4.3	5.3	6.3	5.8	5.1	4.1	4.6	5.2	5.7	4.3	4.9	5.0	4.2	4.4	3.7	4.1	4.0	3.0	1.7	1.3
3.0	3.9	6.2	5.2	4.6	6.4	10.1	7.2	3.1	1.1	1.0	1.9	1.9	2.3	2.6	5.9	6.1	7.7	5.9	4.5	2.8	2.0	1.4	.7	.7	1.1	.8	.9	1.8	1.5	2.3	2.9	2.5	4.0	3.6	2.9
11.2	8.1	7.1	5.4	4.7	5.9	5.5	3.0	4.0	3.3	7.2	9.1	7.5	8.6	8.0	8.3	8.3	7.7	9.1	11.0	9.6	5.9	1.9	1.6	3.2	5.7	7.6	8.1	4.8	7.6	7.8	9.4	8.6	10.0	10.6	11.8
15.0	13.1	9.0	5.0	3.7	1.7	1.5	1.2	.9	2.3	10.0	12.1	11.9	11.4	7.5	5.2	3.7	4.0	9.7	13.4	12.3	10.0	4.3	6.3	8.0	10.6	11.4	10.8	11.0	11.3	10.7	11.9	12.7	13.2	14.2	14.7
11.1	15.6	13.4	11.8	10.9	7.5	3.2	.9	.8	1.1	8.9	11.5	11.7	11.2	10.2	2.7	.9	.7	2.3	11.1	10.8	9.3	9.9	12.3	11.4	10.6	10.4	8.4	5.4	9.0	8.2	10.7	8.2	8.9	9.4	8.0
3.9	7.0	11.3	11.4	10.0	10.5	6.7	3.6	2.4	2.6	4.6	10.8	9.0	6.7	10.5	7.7	1.9	1.0	.9	6.0	8.4	6.3	4.1	9.9	8.4	8.0	6.2	4.4	3.3	5.1	5.3	4.7	4.5	6.1	5.3	3.6
5.2	4.2	5.1	5.7	7.4	8.3	7.7	6.0	4.6	3.5	3.1	9.2	8.2	6.6	7.5	7.9	6.7	3.9	2.7	2.8	6.4	7.0	4.7	6.7	6.6	5.5	4.9	4.9	4.1	5.3	6.3	4.9	5.7	6.6	5.0	5.2
4.9	4.8	4.7	4.3	3.6	4.5	5.2	5.2	5.0	4.1	4.7	6.0	5.2	4.8	4.6	4.7	5.1	5.1	4.2	3.9	5.0	5.5	5.6	5.0	5.2	5.5	4.4	4.0	3.9	4.3	4.3	4.6	5.5	5.6	6.2	6.3
4.7	4.3	4.1	4.0	4.0	3.8	3.6	4.3	4.2	4.2	4.6	4.9	4.3	3.9	4.0	3.8	3.5	2.8	3.3	3.4	3.3	4.0	4.2	4.0	4.0	4.1	3.7	3.4	3.4	3.3	3.7	3.5	4.2	4.7	5.0	4.9
3.1	3.0	2.5	2.4	2.2	2.5	2.5	2.4	2.9	3.1	3.6	3.9	4.3	3.8	2.8	2.6	2.2	2.2	2.1	2.1	2.5	2.7	3.0	3.2	3.1	3.1	2.8	2.4	2.4	2.5	2.8	2.8	2.8	3.0	2.8	2.6
2.2	1.9	1.9	1.9	1.8	1.7	1.8	1.8	2.0	2.4	3.1	3.6	3.4	2.6	2.4	2.2	1.6	1.3	1.4	1.6	1.8	1.9	1.6	1.2	1.6	1.3	.9	.8	.8	.9	.9	.8	1.1	1.5	2.4	2.3
1.5	1.5	1.6	1.4	1.3	1.6	1.5	1.4	1.1	1.1	1.7	2.1	2.4	2.4	2.1	1.4	1.0	.8	.7	.6	.7	.7	.7	.7	.6	.6	.5	.5	.5	.5	.6	.6	.9	1.4	1.7	1.6

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



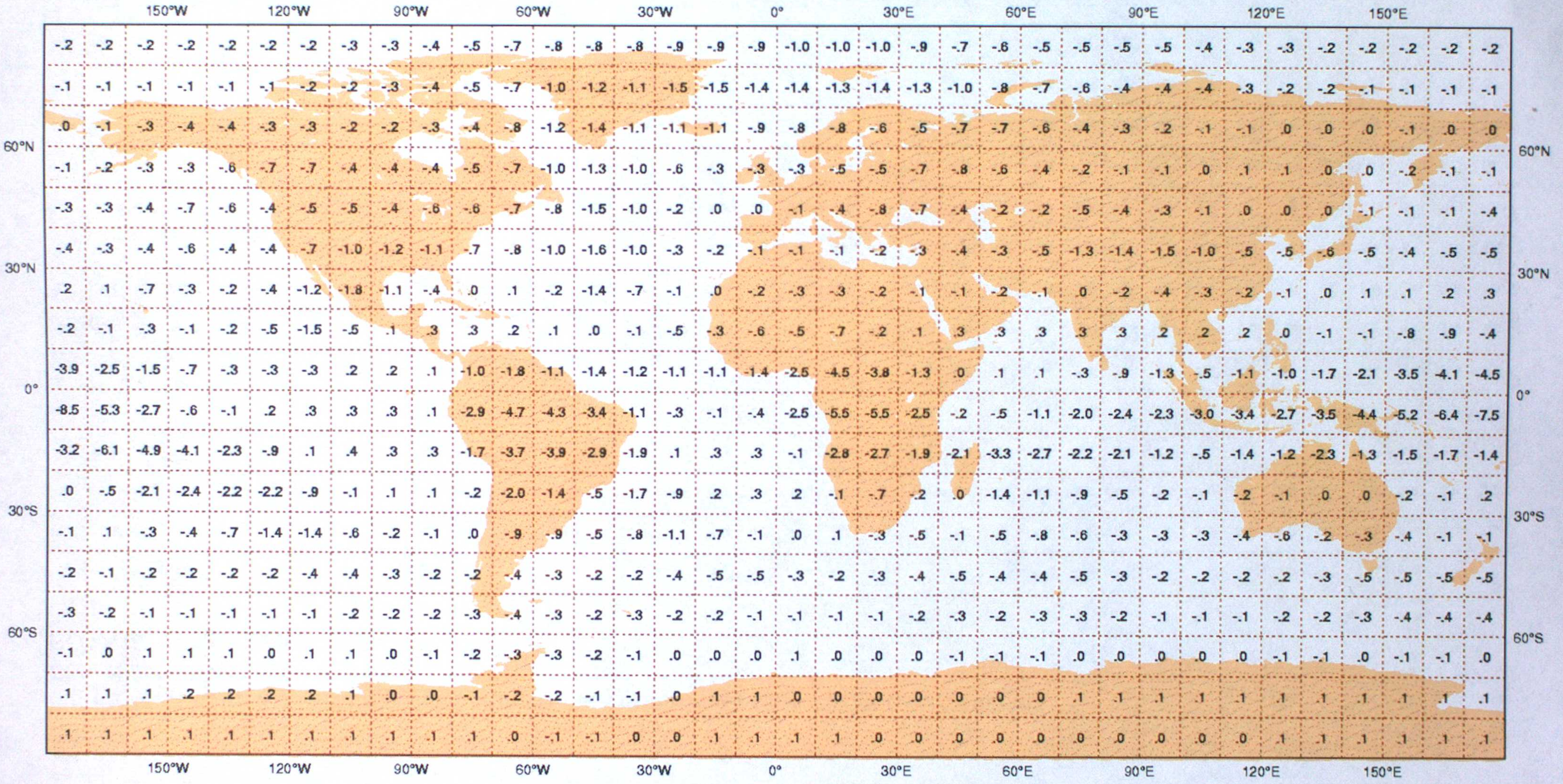
-3.1	-3.3	-3.5	-3.7	-3.7	-3.7	-3.6	-3.5	-3.7	-3.7	-4.2	-5.0	-5.1	-5.0	-4.4	-5.4	-5.8	-5.9	-6.4	-6.7	-6.6	-5.7	-5.2	-4.9	-4.7	-4.7	-4.8	-5.0	-4.4	-4.0	-3.8	-3.5	-3.3	-3.2	-3.2	-3.2
-2.7	-2.7	-2.9	-2.9	-3.0	-3.4	-3.7	-3.8	-3.6	-3.8	-3.8	-5.1	-6.4	-6.2	-4.9	-6.2	-7.4	-7.1	-7.6	-6.9	-7.0	-6.8	-6.0	-5.5	-4.7	-5.0	-4.3	-4.1	-4.1	-3.1	-2.9	-3.1	-3.0	-2.7	-2.7	-2.9
-2.4	-3.5	-4.5	-4.7	-4.5	-3.9	-3.8	-3.6	-3.3	-3.5	-4.0	-5.9	-8.4	-7.7	-5.4	-5.3	-5.1	-4.9	-4.8	-5.4	-4.1	-3.0	-3.6	-3.7	-4.2	-3.7	-3.4	-2.7	-2.3	-2.1	-1.9	-1.7	-2.5	-3.6	-2.6	-2.5
-4.0	-4.1	-4.4	-4.7	-5.9	-5.5	-5.2	-3.8	-3.5	-3.9	-4.4	-5.1	-6.7	-7.0	-4.8	-2.7	-2.2	-2.4	-3.0	-3.9	-3.9	-4.1	-4.3	-3.4	-3.1	-2.3	-2.3	-2.2	-1.8	-1.3	-1.9	-2.3	-3.8	-5.9	-5.2	-4.8
-4.5	-4.7	-4.2	-5.1	-4.4	-3.4	-3.9	-3.5	-3.1	-4.4	-4.4	-4.6	-5.3	-7.7	-4.6	-1.6	-.6	-1.3	-2.3	-5.1	-6.0	-4.9	-3.4	-2.2	-2.2	-4.4	-3.0	-1.7	-1.0	-1.2	-.9	-1.8	-3.4	-4.4	-4.2	-5.1
-2.8	-2.5	-3.0	-3.6	-2.8	-2.7	-4.4	-5.1	-6.0	-5.6	-3.9	-4.5	-5.4	-7.1	-4.4	-2.2	-1.7	-1.4	-1.9	-1.7	-2.0	-2.9	-3.9	-3.1	-4.3	-9.6	-8.7	-8.6	-6.0	-3.6	-3.5	-4.2	-3.4	-3.5	-3.8	-3.5
.5	-.6	-3.5	-1.5	-1.2	-2.0	-5.3	-7.6	-5.3	-1.9	.0	.1	-1.3	-5.6	-2.7	-.9	-.7	-1.4	-2.3	-2.3	-1.9	-1.4	-1.6	-1.8	-1.6	-.8	-1.2	-1.7	.0	-.7	-.9	-.4	.1	.2	.6	.8
-.5	-.5	-1.9	-1.1	-1.1	-2.0	-5.4	-2.4	-.2	.5	.9	1.1	.7	.0	-.5	-2.2	-1.9	-3.3	-2.8	-3.0	-1.5	.2	.7	.8	.8	1.0	1.1	.7	.1	.8	.0	.0	1.0	-1.4	-1.5	-.7
-8.4	-4.8	-3.4	-1.6	-.6	-.9	-1.0	.2	-.1	-.3	-2.3	-5.2	-2.9	-3.4	-3.2	-3.4	-3.3	-3.6	-6.1	-10.8	-8.1	-2.3	.3	.2	.3	-.8	-2.5	-4.1	-1.9	-3.8	-2.6	-4.7	-5.3	-8.5	-9.6	-10.4
-20.2	-11.8	-5.9	-1.3	-.6	.4	.9	.8	.8	.6	-6.1	-12.4	-11.7	-10.0	-3.7	-.7	-.2	-.2	-5.2	-13.1	-13.9	-6.0	-.5	-.9	-2.4	-5.5	-6.5	-6.1	-8.0	-8.8	-7.1	-9.2	-11.5	-12.9	-15.7	-18.3
-7.0	-13.7	-11.7	-9.9	-5.9	-2.8	.2	1.0	1.0	.8	-4.7	-10.1	-11.0	-9.0	-5.8	.2	.9	.8	-.4	-6.8	-7.6	-5.3	-5.6	-8.2	-6.9	-6.0	-5.2	-3.3	-1.1	-3.3	-3.8	-6.6	-3.8	-3.5	-3.6	-3.3
-.2	-2.0	-6.2	-7.3	-6.7	-7.0	-2.9	-.4	.1	.2	-.8	-6.5	-3.9	-2.3	-6.3	-3.6	.6	.9	.8	-1.0	-3.9	-1.3	-.1	-4.1	-3.2	-2.9	-1.9	-.7	-.3	-1.2	-1.4	-1.4	-1.5	-1.6	-.8	.1
-1.4	-.8	-1.5	-1.8	-2.8	-5.7	-5.0	-2.6	-1.3	-.6	.0	-4.3	-3.3	-2.4	-3.8	-4.8	-2.9	-.6	.1	.4	-1.8	-2.1	-.7	-2.0	-3.3	-2.3	-1.5	-1.3	-.9	-1.5	-2.7	-1.1	-2.4	-2.5	-1.2	-1.3
-1.7	-1.6	-1.6	-1.4	-1.3	-1.9	-2.7	-2.6	-2.0	-1.3	-1.3	-2.5	-1.9	-1.7	-1.8	-2.2	-2.7	-2.9	-2.0	-1.8	-2.3	-2.7	-2.8	-2.3	-2.2	-2.6	-2.0	-1.8	-1.7	-1.8	-1.8	-1.9	-3.1	-3.3	-3.1	-2.9
-3.2	-2.5	-2.4	-2.7	-3.1	-3.0	-2.7	-3.1	-2.8	-2.5	-3.0	-3.3	-2.8	-2.6	-3.2	-3.2	-3.1	-2.5	-3.1	-3.3	-3.2	-3.8	-3.5	-3.3	-3.4	-3.2	-3.1	-3.1	-2.9	-2.7	-3.0	-2.5	-3.1	-3.5	-3.5	-3.2
-3.4	-3.3	-3.1	-3.2	-3.0	-3.6	-3.3	-2.8	-3.1	-3.2	-3.7	-4.9	-4.6	-3.8	-3.5	-3.1	-3.1	-2.9	-2.9	-3.3	-3.7	-4.1	-4.2	-3.8	-3.2	-3.1	-2.6	-2.7	-3.3	-3.7	-3.7	-3.4	-2.6	-2.9	-2.9	-2.8
-3.9	-3.5	-3.6	-2.7	-1.9	-1.8	-2.3	-2.8	-3.4	-3.7	-4.5	-5.1	-4.5	-3.8	-3.9	-3.0	-1.9	-1.4	-1.8	-2.7	-3.0	-2.9	-2.8	-1.6	-1.4	-1.3	-1.6	-1.7	-1.6	-1.9	-2.0	-1.3	-1.2	-1.3	-3.0	-4.2
-2.0	-2.1	-2.1	-1.4	-1.2	-1.6	-1.7	-1.5	-1.4	-1.7	-2.3	-2.9	-3.4	-3.3	-2.4	-1.3	-.9	-.7	-.9	-1.3	-1.3	-1.7	-2.1	-2.3	-2.2	-2.0	-1.9	-1.7	-1.6	-1.5	-1.4	-1.3	-1.6	-1.5	-2.3	-2.5

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



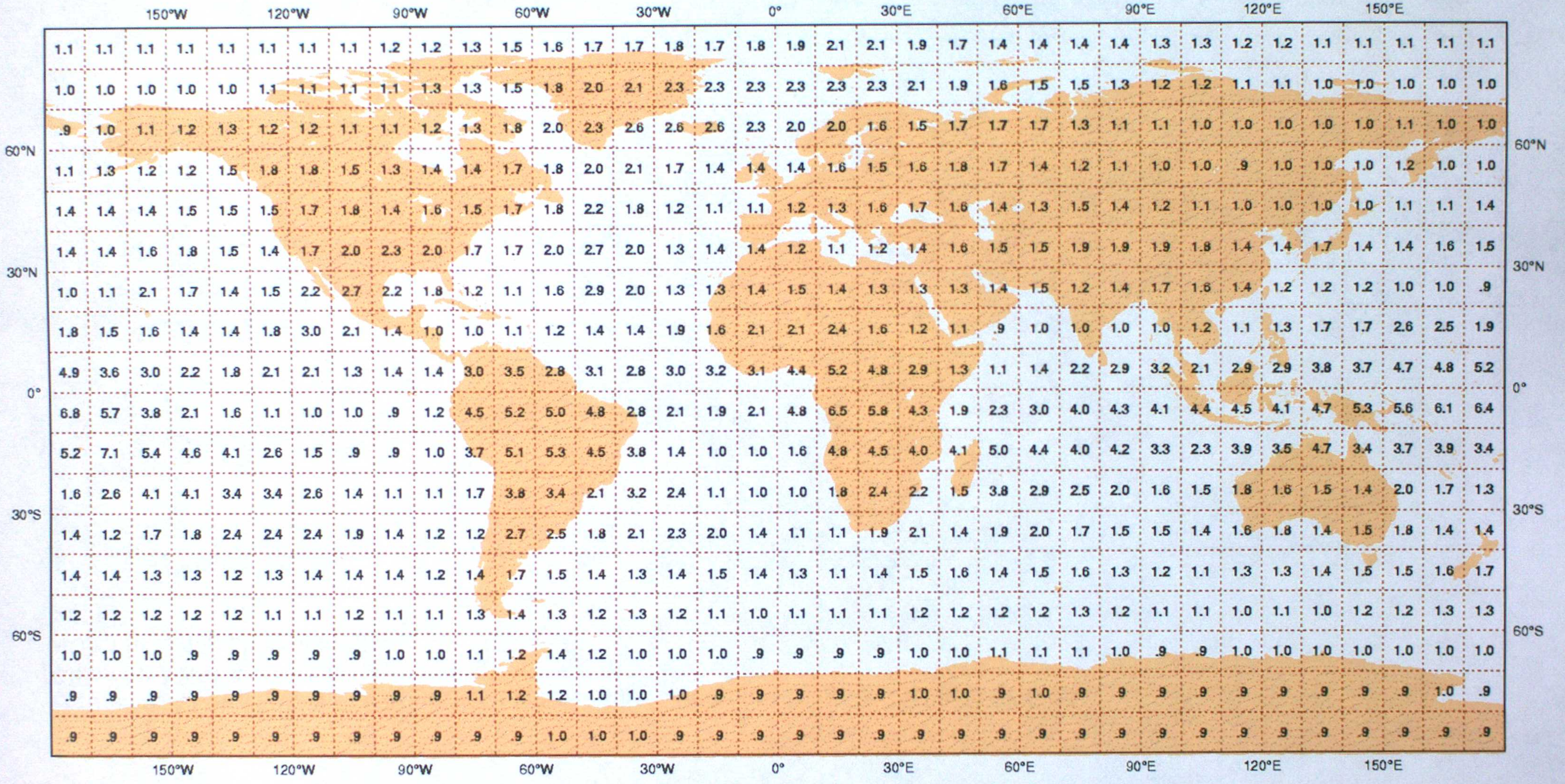
2.2	2.2	2.3	2.4	2.3	2.4	2.3	2.5	2.9	3.4	4.5	5.3	6.3	6.1	5.9	6.4	6.0	6.7	7.1	7.7	7.5	6.2	5.3	4.4	4.3	4.3	4.1	4.2	3.8	3.2	3.0	2.7	2.5	2.3	2.2	2.3
2.1	2.2	2.5	2.3	2.0	2.2	2.4	2.2	2.5	3.9	4.6	5.8	6.9	6.7	6.2	8.4	8.3	8.5	8.5	8.1	7.7	7.0	6.3	5.7	5.7	5.6	4.0	3.5	3.9	3.3	2.5	2.1	2.0	1.9	2.0	2.2
3.1	4.6	5.7	6.2	5.6	4.8	4.0	3.0	2.6	4.0	4.7	7.0	7.9	8.9	8.5	8.5	8.8	8.0	7.1	7.5	6.3	5.0	5.8	6.0	6.5	5.0	3.8	3.3	2.3	2.2	2.3	2.5	4.1	5.3	4.2	3.2
4.9	6.3	6.5	6.2	7.4	7.6	7.4	5.5	4.9	4.5	4.6	6.4	7.4	7.7	7.1	5.7	4.8	4.9	5.5	6.2	6.2	6.6	7.1	6.4	5.8	4.2	3.4	3.6	2.6	2.5	3.3	3.9	4.6	7.2	5.2	4.9
7.1	7.7	6.9	7.4	7.0	6.4	6.9	7.0	5.6	6.3	6.2	7.1	7.9	9.1	7.3	4.5	3.2	3.4	4.7	7.0	8.2	7.6	6.8	5.6	5.6	7.8	7.2	6.1	4.9	4.2	3.5	3.6	4.5	5.2	5.8	7.2
6.5	6.2	7.0	7.6	6.2	6.2	7.3	7.3	8.8	8.5	7.4	7.8	9.0	10.6	7.9	6.0	6.0	5.3	4.7	4.7	5.3	5.9	6.8	6.7	7.4	10.2	11.0	10.5	8.9	6.6	6.2	6.7	6.0	6.2	7.0	7.0
2.2	4.3	8.3	6.1	4.9	5.5	8.6	9.6	8.8	6.3	3.5	3.1	6.6	10.8	7.5	4.9	4.8	5.3	6.4	5.3	4.7	4.4	4.9	5.1	5.9	4.4	5.9	6.1	5.7	5.7	4.2	4.2	3.9	2.8	1.8	1.7
4.1	4.1	5.4	4.7	4.7	6.3	10.0	7.0	3.8	1.6	1.6	2.7	2.9	3.2	3.9	6.4	5.4	6.6	5.6	5.8	4.2	3.2	2.1	1.5	1.5	1.7	1.7	1.8	2.8	2.3	3.1	4.0	3.8	6.1	6.0	4.8
12.3	9.1	7.7	5.4	4.6	6.2	5.8	3.5	4.3	3.7	8.6	10.0	7.9	8.7	8.2	8.7	9.0	8.9	11.9	13.5	12.3	7.3	2.5	2.4	3.5	6.0	8.4	9.0	5.6	8.0	8.0	10.2	10.0	12.5	13.3	13.9
17.6	14.6	9.5	5.0	4.1	2.2	1.9	1.3	1.2	2.4	12.3	13.8	13.6	12.8	7.9	5.9	4.7	5.2	12.9	16.9	15.2	11.3	4.9	6.5	8.3	11.1	11.9	11.5	12.2	12.4	11.4	12.8	14.0	14.8	15.9	16.8
12.6	17.4	14.1	12.2	11.0	7.8	4.2	1.2	1.1	1.7	9.7	13.4	14.1	12.9	11.1	3.4	1.4	1.4	3.6	12.7	12.3	11.0	11.6	13.5	12.3	11.5	11.6	9.2	6.0	9.9	9.4	11.8	8.9	10.0	10.4	9.2
4.3	7.3	11.0	11.6	10.0	11.1	7.6	4.1	2.9	3.3	5.5	11.3	9.7	7.0	11.0	8.1	2.3	1.7	1.6	6.2	8.7	7.0	4.8	10.8	8.9	8.3	6.3	4.9	4.0	5.0	4.9	4.6	4.2	6.0	5.2	3.9
5.2	4.1	5.6	6.5	7.9	8.7	8.1	6.3	4.7	4.0	4.0	10.2	8.5	6.5	7.6	8.2	6.8	4.4	3.2	3.2	6.8	7.4	4.5	6.7	7.1	6.1	5.3	5.2	4.7	5.6	6.6	5.0	5.5	6.7	5.2	5.0
5.3	5.2	4.9	4.7	4.3	5.0	5.5	5.7	5.2	4.3	5.4	6.8	5.7	5.1	4.9	5.2	5.8	5.8	4.9	4.5	5.6	6.1	6.4	5.7	5.6	6.0	4.9	4.5	4.3	4.9	4.9	5.2	6.1	6.2	6.5	6.8
5.5	4.7	4.8	4.8	4.9	4.7	4.4	4.9	4.7	4.7	5.3	6.0	5.0	4.8	5.3	5.1	4.7	3.9	4.5	4.5	4.4	5.1	5.3	4.9	5.0	5.0	4.6	4.2	4.2	4.2	4.6	4.2	5.0	5.4	5.9	5.6
4.2	3.9	3.4	3.4	3.1	3.5	3.5	3.4	3.9	4.0	4.6	5.7	6.2	5.2	4.0	3.7	3.2	3.1	3.1	3.2	3.5	3.9	4.3	4.6	4.2	4.4	3.9	3.4	3.4	3.6	3.9	3.8	3.9	4.2	4.0	3.7
3.4	3.1	3.2	3.1	3.0	2.9	3.1	3.1	3.5	4.0	5.0	5.8	5.1	3.9	3.7	3.4	2.9	2.8	3.0	3.1	3.3	3.5	3.2	2.6	3.1	2.8	2.6	2.7	2.3	2.3	2.4	2.1	2.4	3.1	4.2	3.5
3.0	2.8	3.1	2.9	2.9	3.4	3.2	2.8	2.5	2.5	3.2	3.6	4.1	4.0	3.5	2.7	2.4	2.2	2.1	1.9	1.9	2.0	2.2	2.3	2.2	2.2	2.1	2.0	2.0	1.9	2.0	2.1	2.5	3.3	3.5	3.2

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



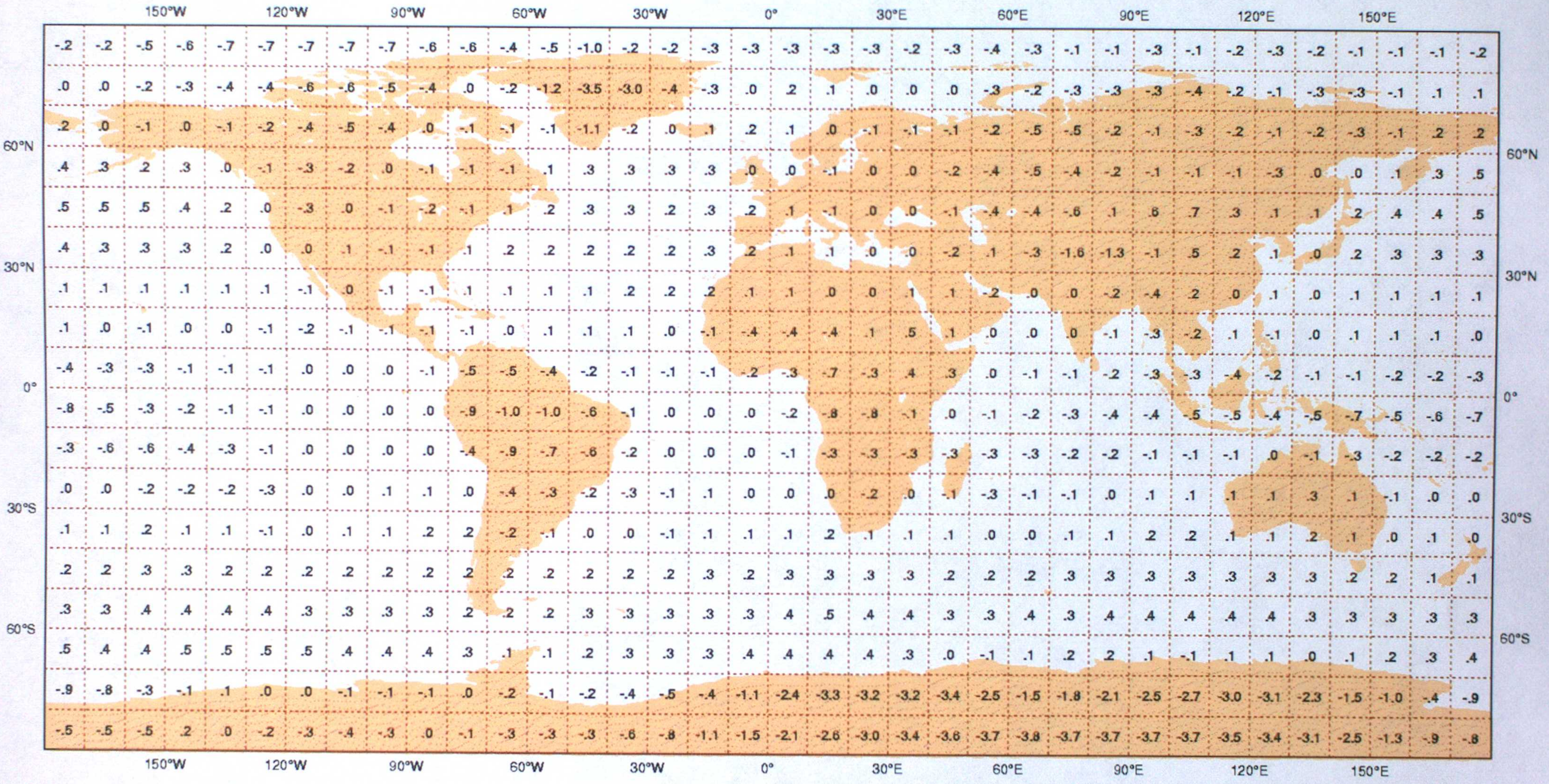
-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.4	-.5	-.7	-.8	-.8	-.8	-.9	-.9	-.9	-1.0	-1.0	-1.0	-.9	-.7	-.6	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.2	-.2	-.2	-.2	-.2
-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.3	-.4	-.5	-.7	-1.0	-1.2	-1.1	-1.5	-1.5	-1.4	-1.4	-1.3	-1.4	-1.3	-1.0	-.8	-.7	-.6	-.4	-.4	-.4	-.3	-.2	-.2	-.1	-.1	-.1	-.1
.0	-.1	-.3	-.4	-.4	-.3	-.3	-.2	-.2	-.3	-.4	-.8	-1.2	-1.4	-1.1	-1.1	-1.1	-.9	-.8	-.8	-.6	-.5	-.7	-.7	-.6	-.4	-.3	-.2	-.1	-.1	.0	.0	.0	-.1	.0	.0
-.1	-.2	-.3	-.3	-.6	-.7	-.7	-.4	-.4	-.4	-.5	-.7	-1.0	-1.3	-1.0	-.6	-.3	-.3	-.3	-.5	-.5	-.7	-.8	-.6	-.4	-.2	-.1	-.1	.0	.1	.1	.0	.0	-.2	-.1	-.1
-.3	-.3	-.4	-.7	-.6	-.4	-.5	-.5	-.4	-.6	-.6	-.7	-.8	-1.5	-1.0	-.2	.0	.0	-.1	-.4	-.8	-.7	-.4	-.2	-.2	-.5	-.4	-.3	-.1	.0	.0	.0	-.1	-.1	-.1	-.4
-.4	-.3	-.4	-.6	-.4	-.4	-.7	-1.0	-1.2	-1.1	-.7	-.8	-1.0	-1.6	-1.0	-.3	-.2	-.1	-.1	-.1	-.2	-.3	-.4	-.3	-.5	-1.3	-1.4	-1.5	-1.0	-.5	-.5	-.6	-.5	-.4	-.5	-.5
.2	.1	-.7	-.3	-.2	-.4	-1.2	-1.8	-1.1	-.4	.0	.1	-.2	-1.4	-.7	-.1	.0	-.2	-.3	-.3	-.2	-.1	-.1	-.2	-.1	.0	-.2	-.4	-.3	-.2	-.1	.0	.1	.1	.2	.3
-.2	-.1	-.3	-.1	-.2	-.5	-1.5	-.5	.1	.3	.3	.2	.1	.0	-.1	-.5	-.3	-.6	-.5	-.7	-.2	.1	.3	.3	.3	.3	.3	.2	.2	.2	.0	-.1	-.1	-.8	-.9	-.4
-3.9	-2.5	-1.5	-.7	-.3	-.3	-.3	.2	.2	.1	-1.0	-1.8	-1.1	-1.4	-1.2	-1.1	-1.1	-1.4	-2.5	-4.5	-3.8	-1.3	.0	.1	.1	-.3	-.9	-1.3	-.5	-1.1	-1.0	-1.7	-2.1	-3.5	-4.1	-4.5
-8.5	-5.3	-2.7	-.6	-.1	.2	.3	.3	.3	.1	-2.9	-4.7	-4.3	-3.4	-1.1	-.3	-.1	-.4	-2.5	-5.5	-5.5	-2.5	-.2	-.5	-1.1	-2.0	-2.4	-2.3	-3.0	-3.4	-2.7	-3.5	-4.4	-5.2	-6.4	-7.5
-3.2	-6.1	-4.9	-4.1	-2.3	-.9	.1	.4	.3	.3	-1.7	-3.7	-3.9	-2.9	-1.9	.1	.3	.3	-.1	-2.8	-2.7	-1.9	-2.1	-3.3	-2.7	-2.2	-2.1	-1.2	-.5	-1.4	-1.2	-2.3	-1.3	-1.5	-1.7	-1.4
.0	-.5	-2.1	-2.4	-2.2	-2.2	-.9	-.1	.1	.1	-.2	-2.0	-1.4	-.5	-1.7	-.9	.2	.3	.2	-.1	-.7	-.2	.0	-1.4	-1.1	-.9	-.5	-.2	-.1	-.2	-.1	.0	.0	-.2	-.1	.2
-.1	.1	-.3	-.4	-.7	-1.4	-1.4	-.6	-.2	-.1	.0	-.9	-.9	-.5	-.8	-1.1	-.7	-.1	.0	.1	-.3	-.5	-.1	-.5	-.8	-.6	-.3	-.3	-.3	-.4	-.6	-.2	-.3	-.4	-.1	-.1
-.2	-.1	-.2	-.2	-.2	-.2	-.4	-.4	-.3	-.2	-.2	-.4	-.3	-.2	-.2	-.4	-.5	-.5	-.3	-.2	-.3	-.4	-.5	-.4	-.4	-.5	-.3	-.2	-.2	-.2	-.2	-.3	-.5	-.5	-.5	-.5
-.3	-.2	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.3	-.4	-.3	-.2	-.3	-.2	-.2	-.1	-.1	-.1	-.1	-.2	-.3	-.2	-.3	-.3	-.2	-.1	-.1	-.1	-.2	-.2	-.3	-.4	-.4	-.4
-.1	.0	.1	.1	.1	.0	.1	.1	.0	-.1	-.2	-.3	-.3	-.2	-.1	.0	.0	.0	.1	.0	.0	.0	-.1	-.1	-.1	.0	.0	.0	.0	.0	-.1	-.1	.0	-.1	-.1	.0
.1	.1	.1	.2	.2	.2	.2	.1	.0	.0	-.1	-.2	-.2	-.1	-.1	.0	.1	.1	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	-.1	-.1	.0	.0	.1	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1	.1

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



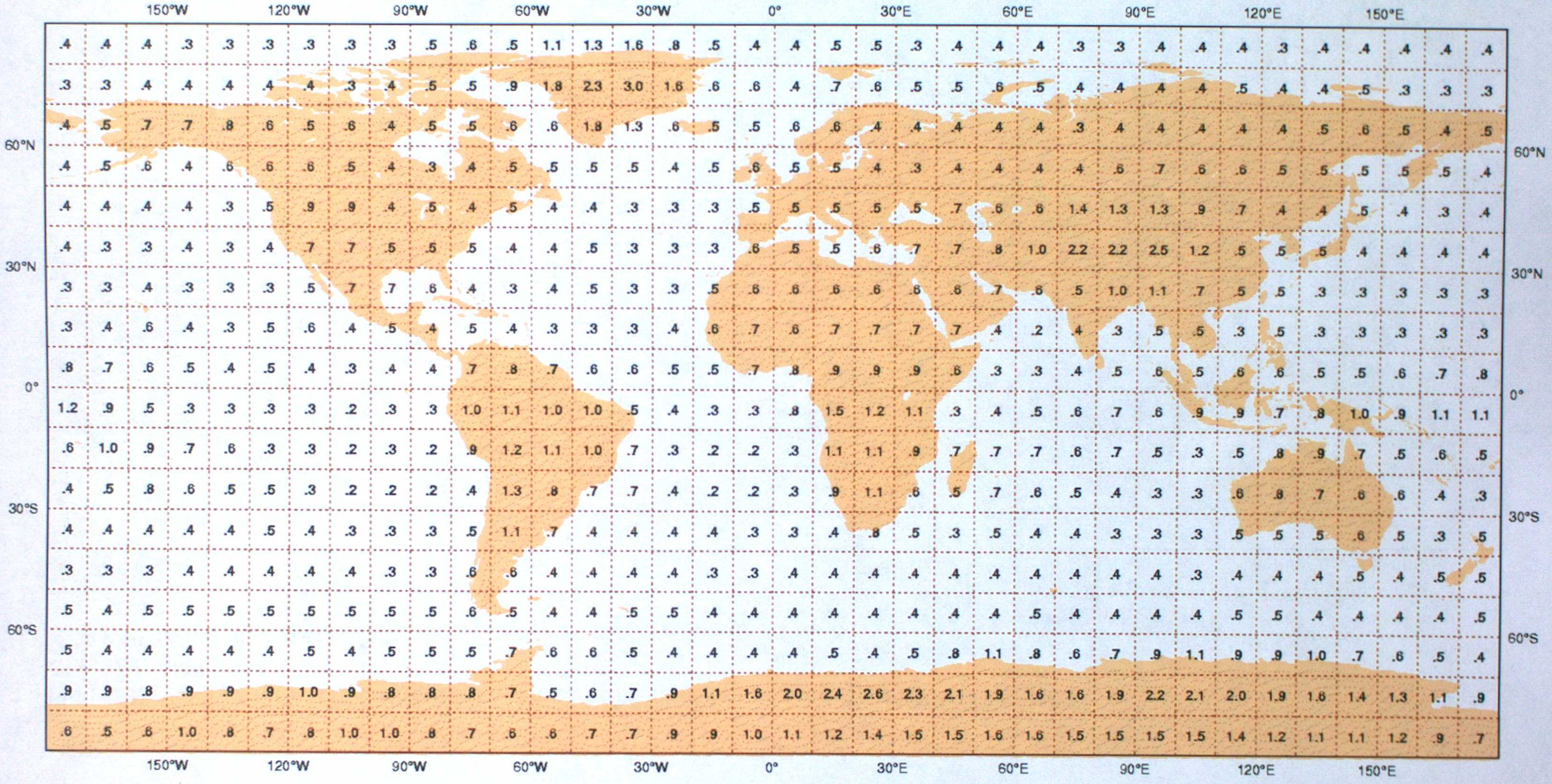
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.5	1.6	1.7	1.7	1.8	1.7	1.8	1.9	2.1	2.1	1.9	1.7	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.1
1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.3	1.3	1.5	1.8	2.0	2.1	2.3	2.3	2.3	2.3	2.3	2.3	2.1	1.9	1.6	1.5	1.5	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0
.9	1.0	1.1	1.2	1.3	1.2	1.2	1.1	1.1	1.2	1.3	1.8	2.0	2.3	2.6	2.6	2.6	2.3	2.0	2.0	1.6	1.5	1.7	1.7	1.7	1.3	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0
1.1	1.3	1.2	1.2	1.5	1.8	1.8	1.5	1.3	1.4	1.4	1.7	1.8	2.0	2.1	1.7	1.4	1.4	1.4	1.6	1.5	1.6	1.8	1.7	1.4	1.2	1.1	1.0	1.0	.9	1.0	1.0	1.0	1.2	1.0	1.0
1.4	1.4	1.4	1.5	1.5	1.5	1.7	1.8	1.4	1.6	1.5	1.7	1.8	2.2	1.8	1.2	1.1	1.1	1.2	1.3	1.6	1.7	1.6	1.4	1.3	1.5	1.4	1.2	1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.4
1.4	1.4	1.6	1.8	1.5	1.4	1.7	2.0	2.3	2.0	1.7	1.7	2.0	2.7	2.0	1.3	1.4	1.4	1.2	1.1	1.2	1.4	1.6	1.5	1.5	1.9	1.9	1.9	1.8	1.4	1.4	1.7	1.4	1.4	1.6	1.5
1.0	1.1	2.1	1.7	1.4	1.5	2.2	2.7	2.2	1.8	1.2	1.1	1.6	2.9	2.0	1.3	1.3	1.4	1.5	1.4	1.3	1.3	1.3	1.4	1.5	1.2	1.4	1.7	1.6	1.4	1.2	1.2	1.2	1.0	1.0	.9
1.8	1.5	1.6	1.4	1.4	1.8	3.0	2.1	1.4	1.0	1.0	1.1	1.2	1.4	1.4	1.9	1.6	2.1	2.1	2.4	1.6	1.2	1.1	.9	1.0	1.0	1.0	1.0	1.2	1.1	1.3	1.7	1.7	2.6	2.5	1.9
4.9	3.6	3.0	2.2	1.8	2.1	2.1	1.3	1.4	1.4	3.0	3.5	2.8	3.1	2.8	3.0	3.2	3.1	4.4	5.2	4.8	2.9	1.3	1.1	1.4	2.2	2.9	3.2	2.1	2.9	2.9	3.8	3.7	4.7	4.8	5.2
6.8	5.7	3.8	2.1	1.6	1.1	1.0	1.0	.9	1.2	4.5	5.2	5.0	4.8	2.8	2.1	1.9	2.1	4.8	6.5	5.8	4.3	1.9	2.3	3.0	4.0	4.3	4.1	4.4	4.5	4.1	4.7	5.3	5.6	6.1	6.4
5.2	7.1	5.4	4.6	4.1	2.6	1.5	.9	.9	1.0	3.7	5.1	5.3	4.5	3.8	1.4	1.0	1.0	1.6	4.8	4.5	4.0	4.1	5.0	4.4	4.0	4.2	3.3	2.3	3.9	3.5	4.7	3.4	3.7	3.9	3.4
1.6	2.6	4.1	4.1	3.4	3.4	2.6	1.4	1.1	1.1	1.7	3.8	3.4	2.1	3.2	2.4	1.1	1.0	1.0	1.8	2.4	2.2	1.5	3.8	2.9	2.5	2.0	1.6	1.5	1.8	1.6	1.5	1.4	2.0	1.7	1.3
1.4	1.2	1.7	1.8	2.4	2.4	2.4	1.9	1.4	1.2	1.2	2.7	2.5	1.8	2.1	2.3	2.0	1.4	1.1	1.1	1.9	2.1	1.4	1.9	2.0	1.7	1.5	1.5	1.4	1.6	1.8	1.4	1.5	1.8	1.4	1.4
1.4	1.4	1.3	1.3	1.2	1.3	1.4	1.4	1.4	1.2	1.4	1.7	1.5	1.4	1.3	1.4	1.5	1.4	1.3	1.1	1.4	1.5	1.6	1.4	1.5	1.6	1.3	1.2	1.1	1.3	1.3	1.4	1.5	1.5	1.6	1.7
1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.2	1.1	1.1	1.3	1.4	1.3	1.2	1.3	1.2	1.1	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.2	1.1	1.1	1.0	1.1	1.0	1.2	1.2	1.3	1.3
1.0	1.0	1.0	.9	.9	.9	.9	.9	1.0	1.0	1.1	1.2	1.4	1.2	1.0	1.0	1.0	.9	.9	.9	.9	1.0	1.0	1.1	1.1	1.1	1.0	.9	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0
.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	1.1	1.2	1.2	1.0	1.0	1.0	.9	.9	.9	.9	.9	1.0	1.0	.9	1.0	.9	.9	.9	.9	.9	.9	.9	.9	.9	1.0	.9
.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	1.0	1.0	1.0	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



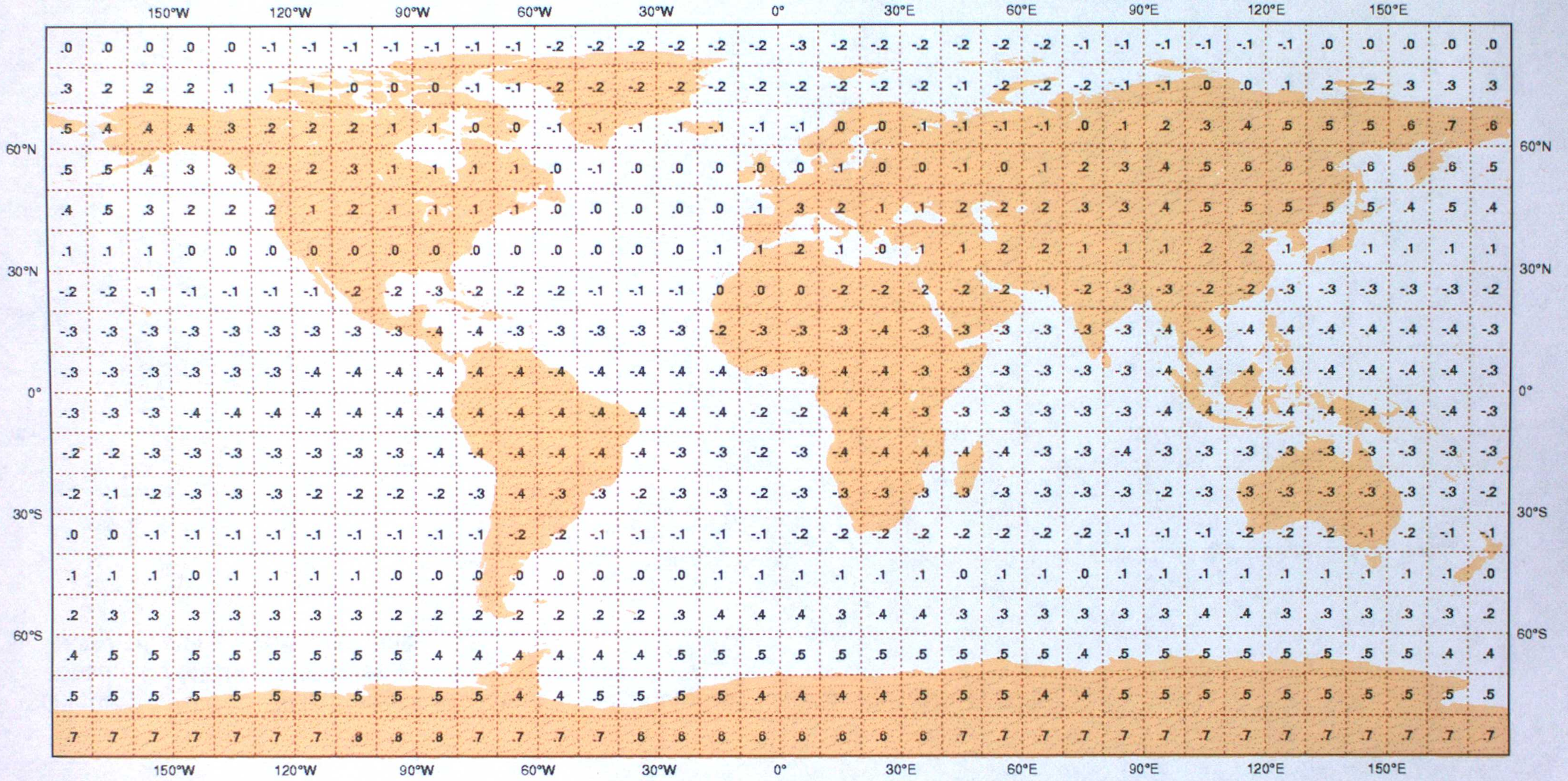
-.2	-.2	-.5	-.6	-.7	-.7	-.7	-.7	-.7	-.6	-.6	-.4	-.5	-1.0	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.4	-.3	-.1	-.1	-.3	-.1	-.2	-.3	-.2	-.1	-.1	-.1	-.2
.0	.0	-.2	-.3	-.4	-.4	-.6	-.6	-.5	-.4	.0	-.2	-1.2	-3.5	-3.0	-.4	-.3	.0	.2	.1	.0	.0	.0	-.3	-.2	-.3	-.3	-.3	-.4	-.2	-.1	-.3	-.3	-.1	.1	.1
.2	.0	-.1	.0	-.1	-.2	-.4	-.5	-.4	.0	-.1	-.1	-.1	-1.1	-.2	.0	.1	.2	.1	.0	-.1	-.1	-.1	-.2	-.5	-.5	-.2	-.1	-.3	-.2	-.1	-.2	-.3	-.1	.2	.2
.4	.3	.2	.3	.0	-.1	-.3	-.2	.0	-.1	-.1	-.1	.1	.3	.3	.3	.3	.0	.0	-.1	.0	.0	-.2	-.4	-.5	-.4	-.2	-.1	-.1	-.1	-.3	.0	.0	.1	.3	.5
.5	.5	.5	.4	.2	.0	-.3	.0	-.1	-.2	-.1	.1	.2	.3	.3	.2	.3	.2	.1	-.1	.0	.0	-.1	-.4	-.4	-.6	.1	.6	.7	.3	.1	.1	.2	.4	.4	.5
.4	.3	.3	.3	.2	.0	.0	.1	-.1	-.1	.1	.2	.2	.2	.2	.2	.3	.2	.1	.1	.0	.0	-.2	.1	-.3	-1.6	-1.3	-.1	.5	.2	.1	.0	.2	.3	.3	.3
.1	.1	.1	.1	.1	.1	-.1	.0	-.1	-.1	.1	.1	.1	.1	.2	.2	.2	.1	.1	.0	.0	.1	.1	-.2	.0	.0	-.2	-.4	.2	.0	.1	.0	.1	.1	.1	.1
.1	.0	-.1	.0	.0	-.1	-.2	-.1	-.1	-.1	-.1	.0	.1	.1	.1	.0	-.1	-.4	-.4	-.4	.1	.5	.1	.0	.0	.0	-.1	-.3	-.2	.1	-.1	.0	.1	.1	.1	.0
-.4	-.3	-.3	-.1	-.1	-.1	.0	.0	.0	-.1	-.5	-.5	-.4	-.2	-.1	-.1	-.1	-.2	-.3	-.7	-.3	.4	.3	.0	-.1	-.1	-.2	-.3	-.3	-.4	-.2	-.1	-.1	-.2	-.2	-.3
-.8	-.5	-.3	-.2	-.1	-.1	.0	.0	.0	.0	-.9	-1.0	-1.0	-.6	-.1	.0	.0	.0	-.2	-.8	-.8	-.1	.0	-.1	-.2	-.3	-.4	-.4	-.5	-.5	-.4	-.5	-.7	-.5	-.6	-.7
-.3	-.6	-.6	-.4	-.3	-.1	.0	.0	.0	.0	-.4	-.9	-.7	-.6	-.2	.0	.0	.0	-.1	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.1	-.1	-.1	.0	-.1	-.3	-.2	-.2	-.2
.0	.0	-.2	-.2	-.2	-.3	.0	.0	.1	.1	.0	-.4	-.3	-.2	-.3	-.1	.1	.0	.0	.0	-.2	.0	-.1	-.3	-.1	-.1	.0	.1	.1	.1	.1	.3	.1	-.1	.0	.0
.1	.1	.2	.1	.1	-.1	.0	.1	.1	.2	.2	-.2	-.1	.0	.0	-.1	.1	.1	.1	.2	.1	.1	.1	.0	.0	.1	.1	.2	.2	.1	.1	.2	.1	.0	.1	.0
.2	.2	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.2	.3	.3	.3	.3	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.2	.2	.1	.1
.3	.3	.4	.4	.4	.4	.3	.3	.3	.3	.2	.2	.2	.3	.3	.3	.3	.3	.4	.5	.4	.4	.3	.3	.4	.3	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3
.5	.4	.4	.5	.5	.5	.5	.4	.4	.4	.3	.1	.1	.2	.3	.3	.3	.4	.4	.4	.4	.3	.0	-.1	.1	.2	.2	.1	-.1	.1	.1	.0	.1	.2	.3	.4
-.9	-.8	-.3	-.1	.1	.0	.0	-.1	-.1	-.1	.0	-.2	-.1	-.2	-.4	-.5	-.4	-1.1	-2.4	-3.3	-3.2	-3.2	-3.4	-2.5	-1.5	-1.8	-2.1	-2.5	-2.7	-3.0	-3.1	-2.3	-1.5	-1.0	-.4	-.9
-.5	-.5	-.5	.2	.0	-.2	-.3	-.4	-.3	.0	-.1	-.3	-.3	-.3	-.6	-.8	-1.1	-1.5	-2.1	-2.6	-3.0	-3.4	-3.6	-3.7	-3.8	-3.7	-3.7	-3.7	-3.7	-3.5	-3.4	-3.1	-2.5	-1.3	-.9	-.8

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



.4	.4	.4	.3	.3	.3	.3	.3	.3	.5	.6	.5	1.1	1.3	1.6	.8	.5	.4	.4	.5	.5	.3	.4	.4	.4	.3	.3	.4	.4	.4	.3	.4	.4	.4	.4	.4
.3	.3	.4	.4	.4	.4	.4	.3	.4	.5	.5	.9	1.8	2.3	3.0	1.6	.6	.6	.4	.7	.6	.5	.5	.6	.5	.4	.4	.4	.4	.5	.4	.4	.5	.3	.3	.3
.4	.5	.7	.7	.8	.6	.5	.6	.4	.5	.5	.6	.6	1.8	1.3	.6	.5	.5	.6	.6	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.5	.6	.5	.4	.5
.4	.5	.6	.4	.6	.6	.6	.5	.4	.3	.4	.5	.5	.5	.5	.4	.5	.6	.5	.5	.4	.3	.4	.4	.4	.4	.6	.7	.6	.6	.5	.5	.5	.5	.5	.4
.4	.4	.4	.4	.3	.5	.9	.9	.4	.5	.4	.5	.4	.4	.3	.3	.3	.5	.5	.5	.5	.5	.7	.6	.6	1.4	1.3	1.3	.9	.7	.4	.4	.5	.4	.3	.4
.4	.3	.3	.4	.3	.4	.7	.7	.5	.5	.5	.4	.4	.5	.3	.3	.3	.6	.5	.5	.6	.7	.7	.8	1.0	2.2	2.2	2.5	1.2	.5	.5	.5	.4	.4	.4	.4
.3	.3	.4	.3	.3	.3	.5	.7	.7	.6	.4	.3	.4	.5	.3	.3	.5	.6	.6	.6	.6	.6	.6	.7	.6	.5	1.0	1.1	.7	.5	.5	.3	.3	.3	.3	.3
.3	.4	.6	.4	.3	.5	.6	.4	.5	.4	.5	.4	.3	.3	.3	.4	.6	.7	.6	.7	.7	.7	.7	.4	.2	.4	.3	.5	.5	.3	.5	.3	.3	.3	.3	.3
.8	.7	.6	.5	.4	.5	.4	.3	.4	.4	.7	.8	.7	.6	.6	.5	.5	.7	.8	.9	.9	.9	.6	.3	.3	.4	.5	.6	.5	.6	.6	.5	.5	.6	.7	.8
1.2	.9	.5	.3	.3	.3	.3	.2	.3	.3	1.0	1.1	1.0	1.0	.5	.4	.3	.3	.8	1.5	1.2	1.1	.3	.4	.5	.6	.7	.6	.9	.9	.7	.8	1.0	.9	1.1	1.1
.6	1.0	.9	.7	.6	.3	.3	.2	.3	.2	.9	1.2	1.1	1.0	.7	.3	.2	.2	.3	1.1	1.1	.9	.7	.7	.7	.6	.7	.5	.3	.5	.8	.9	.7	.5	.6	.5
.4	.5	.8	.6	.5	.5	.3	.2	.2	.2	.4	1.3	.8	.7	.7	.4	.2	.2	.3	.9	1.1	.6	.5	.7	.6	.5	.4	.3	.3	.6	.8	.7	.6	.6	.4	.3
.4	.4	.4	.4	.4	.5	.4	.3	.3	.3	.5	1.1	.7	.4	.4	.4	.4	.3	.3	.4	.8	.5	.3	.5	.4	.4	.3	.3	.3	.5	.5	.5	.6	.5	.3	.5
.3	.3	.3	.4	.4	.4	.4	.4	.3	.3	.6	.6	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.5	.4	.5	.5
.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.5
.5	.4	.4	.4	.4	.4	.5	.4	.5	.5	.5	.7	.6	.6	.5	.4	.4	.4	.4	.5	.4	.5	.8	1.1	.8	.6	.7	.9	1.1	.9	.9	1.0	.7	.6	.5	.4
.9	.9	.8	.9	.9	.9	1.0	.9	.8	.8	.8	.7	.5	.6	.7	.9	1.1	1.6	2.0	2.4	2.6	2.3	2.1	1.9	1.6	1.6	1.9	2.2	2.1	2.0	1.9	1.6	1.4	1.3	1.1	.9
.6	.5	.6	1.0	.8	.7	.8	1.0	1.0	.8	.7	.6	.6	.7	.7	.9	.9	1.0	1.1	1.2	1.4	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.2	1.1	1.1	1.2	.9	.7

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations



.0	.0	.0	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.1	-.1	.0	.0	.0	.0	.0
.3	.2	.2	.2	.1	.1	.1	.0	.0	.0	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.2	-.1	-.1	.0	.0	.1	.2	.2	.3	.3	.3
.5	.4	.4	.4	.3	.2	.2	.2	.1	.1	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	.0	.0	-.1	-.1	-.1	-.1	.0	.1	.2	.3	.4	.5	.5	.5	.6	.7	.6
.5	.5	.4	.3	.3	.2	.2	.3	.1	.1	.1	.1	.0	-.1	.0	.0	.0	.0	.0	.1	.0	.0	-.1	.0	.1	.2	.3	.4	.5	.6	.6	.6	.6	.6	.6	.5
.4	.5	.3	.2	.2	.2	.1	.2	.1	.1	.1	.1	.0	.0	.0	.0	.0	.1	.3	.2	.1	.1	.2	.2	.2	.3	.3	.4	.5	.5	.5	.5	.5	.4	.5	.4
.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.2	.1	.0	.1	.1	.2	.2	.2	.1	.1	.1	.2	.2	.1	.1	.1	.1	.1	.1
-.2	-.2	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.3	-.2	-.2	-.2	-.2	-.1	-.1	-.1	.0	.0	.0	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.3	-.3	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.2
-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.3	-.3	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3
-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3
-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.2	-.2	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3
-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.2	-.3	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3
-.2	-.1	-.2	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.3	-.4	-.3	-.3	-.2	-.3	-.3	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.2
.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.2	-.2	-.2	-.1	-.2	-.1	-.1
.1	.1	.1	.0	.1	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1	.1	.0	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.0
.2	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.3	.4	.4	.4	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.2
.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.5	.5	.5	.5	.4	.4	.4	.4	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.7	.7	.7	.6	.6	.6	.6	.6	.6	.6	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations

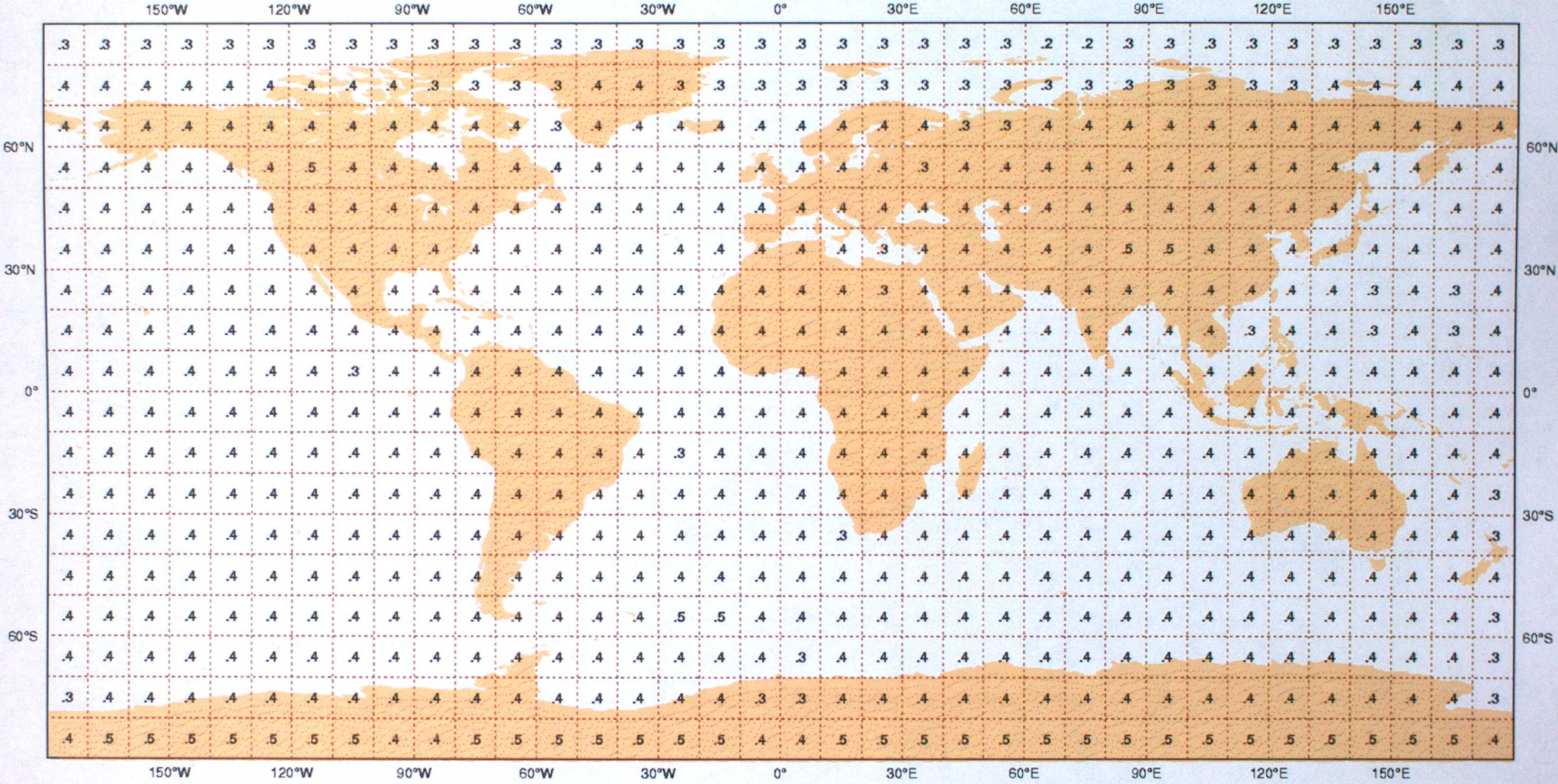
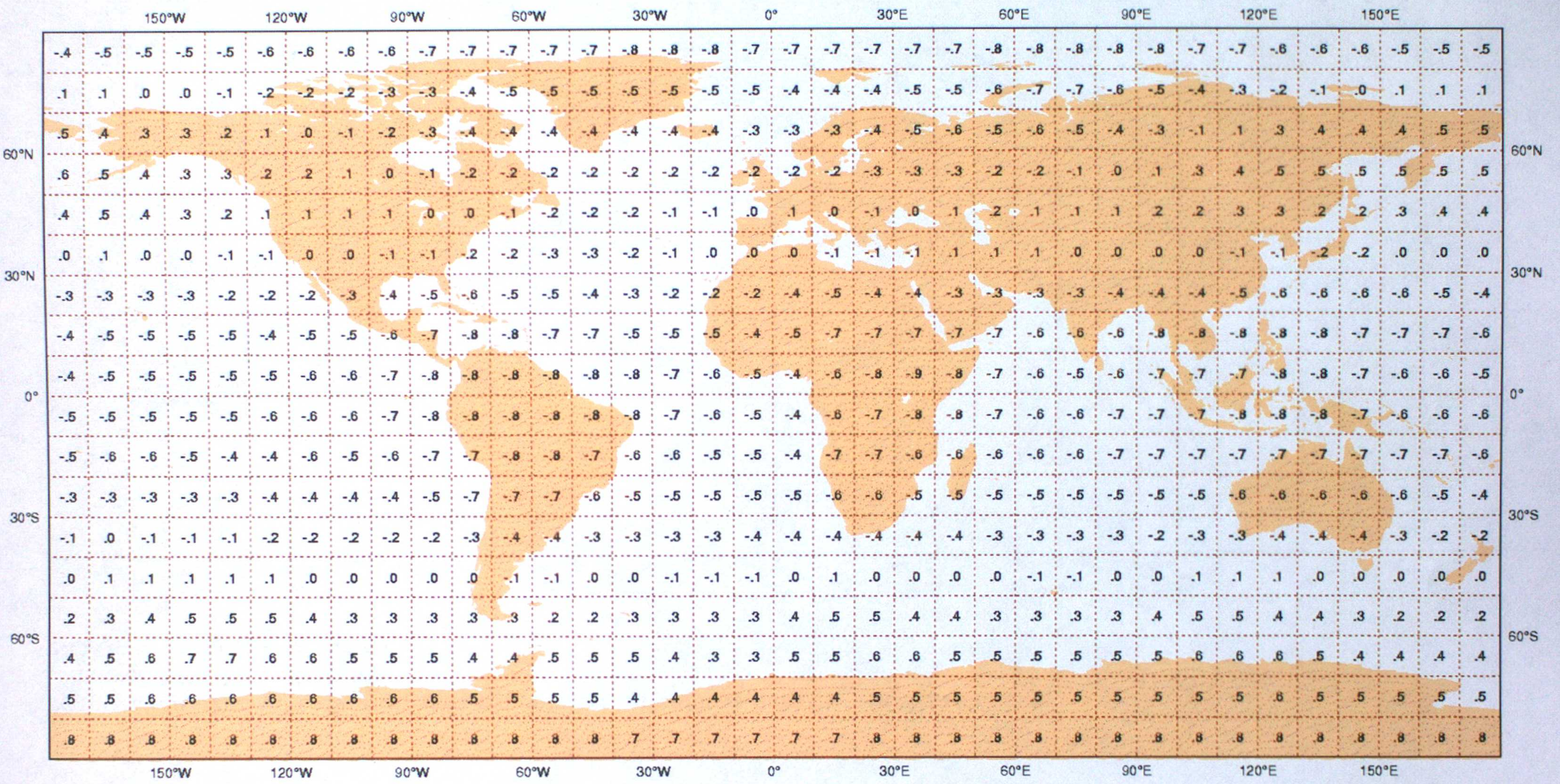
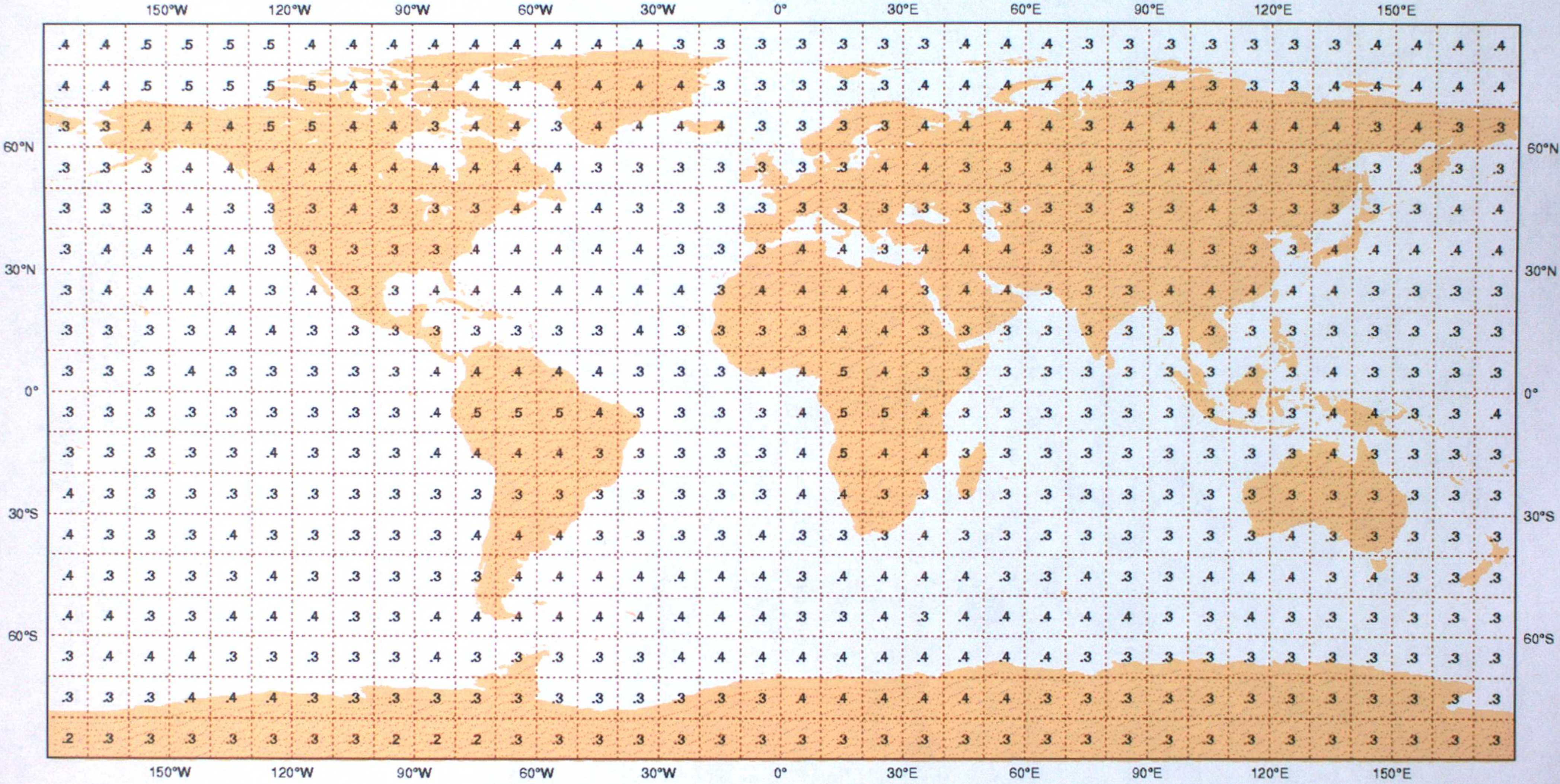

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



-.4	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.6	-.7	-.7	-.7	-.7	-.7	-.8	-.8	-.8	-.7	-.7	-.7	-.7	-.7	-.7	-.8	-.8	-.8	-.8	-.8	-.7	-.7	-.6	-.6	-.6	-.5	-.5	-.5
.1	.1	.0	.0	-.1	-.2	-.2	-.2	-.3	-.3	-.4	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.4	-.4	-.4	-.5	-.5	-.6	-.7	-.7	-.6	-.5	-.4	-.3	-.2	-.1	.0	.1	.1	.1
.5	.4	.3	.3	.2	.1	.0	-.1	-.2	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.4	-.5	-.6	-.5	-.6	-.5	-.4	-.3	-.1	.1	.3	.4	.4	.4	.5	.5
.6	.5	.4	.3	.3	.2	.2	.1	.0	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.2	-.2	-.1	.0	.1	.3	.4	.5	.5	.5	.5	.5	.5
.4	.5	.4	.3	.2	.1	.1	.1	.1	.0	.0	-.1	-.2	-.2	-.2	-.1	-.1	.0	.1	.0	-.1	.0	.1	.2	.1	.1	.1	.2	.2	.3	.3	.2	.2	.3	.4	.4
.0	.1	.0	.0	-.1	-.1	.0	.0	-.1	-.1	-.2	-.2	-.3	-.3	-.2	-.1	.0	.0	.0	-.1	-.1	-.1	.1	.1	.1	.0	.0	.0	.0	-.1	-.1	-.2	-.2	.0	.0	.0
-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.3	-.4	-.5	-.6	-.5	-.5	-.4	-.3	-.2	-.2	-.2	-.4	-.5	-.4	-.4	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.5	-.6	-.6	-.6	-.6	-.5	-.4
-.4	-.5	-.5	-.5	-.5	-.4	-.5	-.5	-.6	-.7	-.8	-.8	-.7	-.7	-.5	-.5	-.5	-.4	-.5	-.7	-.7	-.7	-.7	-.7	-.6	-.6	-.6	-.8	-.8	-.8	-.8	-.8	-.7	-.7	-.7	-.6
-.4	-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.7	-.8	-.8	-.8	-.8	-.8	-.8	-.7	-.6	-.5	-.4	-.6	-.8	-.9	-.8	-.7	-.6	-.5	-.6	-.7	-.7	-.7	-.8	-.8	-.7	-.6	-.6	-.5
-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.7	-.8	-.8	-.8	-.8	-.8	-.8	-.7	-.6	-.5	-.4	-.6	-.7	-.8	-.8	-.7	-.6	-.6	-.7	-.7	-.7	-.8	-.8	-.8	-.7	-.6	-.6	-.6
-.5	-.6	-.6	-.5	-.4	-.4	-.6	-.5	-.6	-.7	-.7	-.8	-.8	-.7	-.6	-.6	-.5	-.5	-.4	-.7	-.7	-.6	-.6	-.6	-.6	-.6	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.7	-.6
-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.5	-.7	-.7	-.7	-.6	-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.6	-.6	-.5	-.4
-.1	.0	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.2	-.3	-.3	-.4	-.4	-.4	-.3	-.2	-.2
.0	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0	-.1	-.1	.0	.0	-.1	-.1	-.1	.0	.1	.0	.0	.0	.0	-.1	-.1	.0	.0	.1	.1	.1	.0	.0	.0	.0	.0
.2	.3	.4	.5	.5	.5	.4	.3	.3	.3	.3	.3	.2	.2	.3	.3	.3	.3	.4	.5	.5	.4	.4	.3	.3	.3	.3	.4	.5	.5	.4	.4	.3	.2	.2	.2
.4	.5	.6	.7	.7	.6	.6	.5	.5	.5	.4	.4	.5	.5	.5	.4	.3	.3	.5	.5	.6	.6	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.4	.4	.4	.4
.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5
.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.8

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). FEBRUARY 2005
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



.4	.4	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4
.4	.4	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.3	.4	.3	.3	.3	.4	.4	.4	.4	.4
.3	.3	.4	.4	.4	.5	.5	.4	.4	.3	.4	.4	.3	.4	.4	.4	.4	.3	.3	.3	.3	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.3	.4	.3	.3
.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.4	.4	.3	.4	.4	.4	.3	.4	.3	.3	.3	.3
.3	.3	.3	.4	.3	.3	.3	.4	.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4
.3	.4	.4	.4	.4	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.3	.3	.3	.4	.4	.3	.4	.4	.4	.3	.3	.3	.4	.3	.3	.3	.4	.4	.4	.4	.4
.3	.4	.4	.4	.4	.3	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.3	.4	.4	.3	.3	.3	.4	.4	.4	.4	.4	.3	.3	.3	.3
.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.3	.3	.3	.4	.4	.5	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.5	.5	.5	.4	.3	.3	.3	.3	.4	.5	.5	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.4
.3	.3	.3	.3	.3	.4	.3	.3	.3	.4	.4	.4	.4	.3	.3	.3	.3	.3	.4	.5	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3
.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.4	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.4	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3
.4	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.3	.3	.4	.3	.3	.4	.4	.4	.3	.4	.3	.3	.3
.4	.4	.3	.3	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.3	.4	.4	.4	.4	.4	.3	.3	.4	.3	.3	.3	.3	.3	.3
.3	.4	.4	.4	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.2	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the wind observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13534	37.9	-32.9	P	663	0	0	0.8	-0.2	0.8
26505	77.2	-50.8	P	174	1	1	1.4	0.2	1.4
41520	19.9	-70.7	P	173	2	71	1.9	0.1	1.9
41521	18.0	-64.4	P	1654	0	68	0.6	-1.6	1.7
41539	23.8	-67.3	P	650	0	0	0.5	1.3	1.4
41540	40.6	-44.4	P	636	0	2	1.1	1.0	1.4
41541	24.4	-76.7	P	650	0	0	0.5	1.3	1.4
41542	26.5	-69.9	P	650	0	0	0.5	0.0	0.5
41543	23.4	-72.6	P	650	0	0	0.5	-0.1	0.5
41544	22.6	-61.6	P	651	0	0	0.6	0.0	0.6
41545	22.3	-65.9	P	652	0	0	0.5	0.4	0.7
41546	15.9	-63.8	P	644	0	48	0.8	1.0	1.3
41548	17.6	-59.8	P	1253	0	48	0.8	0.6	1.0
41549	16.8	-60.9	P	590	0	42	0.8	0.8	1.1
41551	12.9	-72.7	P	1208	0	47	0.9	0.1	0.9
41595	25.3	-41.7	P	604	0	17	0.7	1.1	1.3
41601	46.9	-25.6	P	642	0	0	0.8	-0.4	0.9
41631	29.1	-67.0	P	28	4	7	1.2	1.9	2.3
41663	17.3	-62.7	P	1520	0	78	1.0	-2.0	2.2
41664	11.1	-78.2	P	1924	0	70	1.0	-0.2	1.0
41665	16.3	-61.0	P	1842	0	68	1.0	-1.4	1.8
41920	20.4	-65.6	P	446	1	56	3.8	2.8	4.7
41921	28.0	-73.7	P	507	2	100	1.7	2.8	3.3
41924	21.8	-73.1	P	511	1	31	0.9	-0.1	0.9
41925	21.2	-73.4	P	503	0	28	0.6	-0.2	0.6
41927	25.6	-70.8	P	510	0	29	0.5	-0.3	0.6
41929	29.7	-73.4	P	591	0	36	0.7	0.3	0.8
41931	35.2	-72.2	P	529	1	32	1.0	-0.2	1.0
41932	19.8	-64.3	P	544	0	31	0.8	-0.2	0.8
41934	24.8	-68.0	P	585	0	34	0.8	-1.0	1.3
41935	21.3	-64.4	P	501	0	29	1.1	-0.4	1.1
41939	35.2	-60.6	P	580	0	63	1.5	-3.8	4.0
44547	59.2	-4.5	P	561	0	3	0.6	0.0	0.6
44549	52.6	-35.3	P	579	2	5	1.0	0.6	1.1
44550	50.8	-34.9	P	754	0	25	0.7	0.3	0.8
44601	50.4	-40.6	P	585	0	0	0.8	-0.3	0.9
44607	41.5	-47.7	P	660	0	0	1.0	-0.2	1.0
44608	41.7	-45.3	P	658	0	0	0.9	-0.2	1.0
44609	49.4	-42.3	P	437	0	1	0.9	-0.1	0.9
44610	55.3	-37.3	P	469	0	1	0.5	-0.3	0.6
44611	52.8	-40.9	P	433	0	0	0.6	-0.2	0.6
44612	56.8	-24.3	P	587	0	1	0.6	0.0	0.6
44615	47.6	-49.0	P	416	0	1	0.8	0.0	0.9
44617	52.2	-21.9	P	218	0	1	0.8	0.7	1.0
44623	26.6	-52.8	P	646	0	0	0.6	0.0	0.6
44624	50.9	-25.7	P	767	0	24	0.8	-0.9	1.2
44627	43.1	-22.9	P	829	0	25	0.5	-0.5	0.7
44628	31.1	-28.9	P	617	0	0	0.6	-0.1	0.6
44630	31.8	-44.5	P	636	0	0	0.8	0.4	0.9
44721	53.2	-39.6	P	659	0	1	0.8	0.3	0.9
44722	45.0	-40.9	P	645	0	1	0.8	0.0	0.8
44723	56.8	-36.0	P	661	0	1	0.6	-0.3	0.7
44725	52.1	-44.8	P	663	0	1	0.7	0.4	0.8
44726	49.5	-45.3	P	650	0	0	0.8	-0.2	0.8
44727	48.9	-40.8	P	440	0	1	1.0	0.1	1.0
44728	45.4	-48.3	P	417	0	0	0.8	0.5	0.9

44742	39.1	-17.6	P	502	0	0	0.5	-0.2	0.5
44743	44.7	-13.0	P	552	0	1	0.4	-0.1	0.4
44745	49.2	-8.2	P	672	0	3	0.4	-0.3	0.5
44766	48.9	-2.7	P	58	0	0	0.4	-0.6	0.7

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
44773	63.0	-2.9	P	510	1	46	0.9	0.1	0.9
44775	55.5	-24.1	P	731	0	52	0.8	-0.3	0.9
44777	22.3	-57.1	P	531	0	37	0.6	-0.2	0.6
44778	32.6	-41.5	P	601	0	42	0.8	-0.2	0.8
44779	51.9	-10.9	P	225	0	39	0.7	-0.3	0.8
62510	37.4	-22.9	P	654	0	0	0.7	0.1	0.7
62511	47.5	-12.2	P	584	0	1	0.6	0.4	0.7
62512	44.4	-15.1	P	645	0	1	0.4	0.2	0.5
62513	50.9	-28.7	P	517	0	1	0.6	0.2	0.6
62514	59.5	-31.7	P	500	0	1	0.6	0.0	0.6
62556	34.7	-23.0	P	651	0	2	0.6	-0.1	0.6
62557	37.6	-12.8	P	632	0	0	0.5	-0.1	0.5
62560	44.1	-17.4	P	592	0	0	0.5	0.4	0.7
62562	51.1	-18.4	P	817	0	32	0.9	0.6	1.1
62563	55.3	-11.9	P	652	0	2	0.5	-0.3	0.6
62564	43.4	-20.9	P	650	0	0	0.5	0.3	0.6
62566	57.7	-19.1	P	645	0	1	0.8	-0.2	0.8
62694	51.3	-10.6	P	550	0	3	1.2	0.3	1.2
62801	31.2	-36.3	P	594	0	1	0.8	0.2	0.8
64608	59.3	-58.3	P	628	0	7	2.2	1.4	2.6
64609	64.3	-29.7	P	661	0	1	0.8	-0.3	0.8
64610	63.2	-14.5	P	608	0	0	0.7	0.1	0.7
64611	62.5	-27.0	P	627	0	0	0.7	-0.2	0.7
64612	61.5	-25.3	P	661	0	2	0.8	-0.6	1.0

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41539	23.8	-67.3	SPEED	321	0	100	2.4	3.3	4.1
41540	40.6	-44.4	SPEED	612	0	100	3.5	2.0	4.0
41541	24.4	-76.7	SPEED	1	0	100	0.0	18.4	18.4
41542	26.5	-69.9	SPEED	628	0	100	2.0	0.1	2.0
41543	23.4	-72.6	SPEED	619	0	100	1.6	-0.7	1.8
41544	22.6	-61.6	SPEED	637	0	100	1.7	0.0	1.7
41545	22.3	-65.9	SPEED	628	0	100	1.5	-0.4	1.5
41595	25.3	-41.7	SPEED	13	0	100	1.3	-6.1	6.3
41920	20.4	-65.6	SPEED	24	13	100	7.3	4.3	8.5
41921	28.0	-73.7	SPEED	430	1	100	3.2	-4.6	5.6
41922	21.6	-71.4	SPEED	59	100	0			
41924	21.8	-73.1	SPEED	18	22	100	7.5	6.4	9.8
41925	21.2	-73.4	SPEED	482	1	100	3.1	-5.2	6.0
41927	25.6	-70.8	SPEED	6	33	100	1.2	1.5	1.9
41929	29.7	-73.4	SPEED	2	100	0			
41931	35.2	-72.2	SPEED	5	40	100	0.8	-3.7	3.8
41932	19.8	-64.3	SPEED	2	50	100	0.0	20.0	20.0
41934	24.8	-68.0	SPEED	6	33	100	4.8	9.9	11.0
41935	21.3	-64.4	SPEED	5	40	100	9.8	11.2	14.9
41939	35.2	-60.6	SPEED	1	0	100	0.0	-12.4	12.4
62511	47.5	-12.2	SPEED	461	0	100	2.2	3.0	3.7
62566	57.7	-19.1	SPEED	576	0	100	1.9	0.5	2.0

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41539	23.8	-67.3	DIRN.	226	0	0	13.9	1.0	13.9
41540	40.6	-44.4	DIRN.	558	1	0	19.2	-9.3	21.4
41541	24.4	-76.7	DIRN.	1	0	0	0.0	18.0	18.0

41542	26.5	-69.9	DIRN.	397	0	0	16.5	15.9	22.9
41543	23.4	-72.6	DIRN.	394	0	0	13.2	4.2	13.8
41544	22.6	-61.6	DIRN.	380	0	0	16.3	6.9	17.7
41545	22.3	-65.9	DIRN.	435	0	0	15.9	2.0	16.0
41920	20.4	-65.6	DIRN.	13	23	0	81.7	24.4	85.2
41921	28.0	-73.7	DIRN.	12	42	0	70.5	3.8	70.6
41922	21.6	-71.4	DIRN.	59	100	0			
41924	21.8	-73.1	DIRN.	13	31	0	63.5	-9.0	64.1
41925	21.2	-73.4	DIRN.	10	40	0	22.7	-0.4	22.7
41927	25.6	-70.8	DIRN.	4	50	0	25.6	90.8	94.3
41929	29.7	-73.4	DIRN.	2	100	0			
41931	35.2	-72.2	DIRN.	3	67	0	0.0	114.7	114.7
41932	19.8	-64.3	DIRN.	2	50	0	0.0	6.0	6.0
41934	24.8	-68.0	DIRN.	6	33	0	72.4	29.6	78.2
41935	21.3	-64.4	DIRN.	5	40	0	43.5	-3.6	43.7
62511	47.5	-12.2	DIRN.	373	0	0	19.6	6.0	20.5
62566	57.7	-19.1	DIRN.	511	0	0	17.4	-0.3	17.4

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	757	0	4	1.4	0.0	518	0	3	0	7.0	0.6
ACA	539	0	4	1.3	-0.2	334	0	4	0	6.0	0.5
AEA	371	0	2	1.5	0.0	316	0	1	0	6.3	1.1
AEU	28	0	4	1.4	-0.2	22	0	9	0	11.1	1.8
AFL	501	0	1	1.5	0.6	271	0	6	0	9.5	-0.3
AFR	799	0	5	1.3	0.3	786	0	6	0	6.4	0.3
AJM	176	1	3	1.4	0.0	149	0	5	0	7.1	0.3
AMT	148	0	9	1.6	0.5	149	0	13	0	7.4	0.0
AMX	257	0	2	1.5	0.0	227	0	82	0	8.8	0.2
AUA	42	2	60	5.1	3.9	43	0	23	0	7.6	-0.5
AVA	34	0	3	1.9	0.4	33	0	6	0	10.4	-1.6
AZA	329	2	11	2.4	0.6	260	0	4	0	6.3	0.5
BAL	209	0	11	1.3	-0.1	210	0	11	0	6.7	0.7
BAW	461	0	16	1.8	-0.7	310	0	14	0	6.9	0.0
BPA	508	1	76	1.6	0.5	495	0	10	0	6.9	0.4
BWA	162	2	7	1.5	0.0	138	1	1	0	5.0	0.8
CFC	47	0	6	1.2	-0.4	45	0	11	0	8.3	0.1
CFG	608	0	5	1.2	0.3	543	0	5	0	6.3	0.1
CKS	115	1	9	1.7	-0.5	78	0	12	0	11.2	-0.2
CLX	280	0	2	1.4	-0.3	184	0	5	0	6.3	0.2
COA	115	1	31	1.6	0.0	78	0	35	0	8.1	0.8
CRL	533	1	5	1.6	0.5	518	1	6	0	6.1	0.6
CUB	121	1	5	1.4	-0.4	109	0	8	0	8.8	1.3
DAL	1003	0	10	1.5	-0.4	702	0	9	0	7.6	0.2
DHL	146	0	100	6.2	-5.5	77	0	35	0	15.1	3.0
DLH	628	0	10	1.5	0.4	604	0	11	0	6.8	0.6
DRD	53	0	6	1.9	-0.2	53	0	4	0	4.3	0.5
EDW	45	2	4	1.8	-1.1	32	0	0	0	4.4	0.9
EEZ	118	0	10	1.5	0.2	118	0	12	0	7.0	0.6
EIA	267	0	11	1.4	0.3	261	0	100	0	21.8	5.2
ELY	64	0	3	1.8	0.6	46	0	0	0	5.4	0.2
FCA	86	1	3	1.7	0.1	76	0	5	0	8.1	1.1
FDX	580	0	32	1.5	0.4	416	0	26	0	6.1	0.6
FIN	249	1	6	1.5	0.2	178	1	4	0	6.8	0.2
FWI	246	1	3	1.7	-0.3	250	0	4	0	7.6	0.8
GCO	134	0	11	1.2	0.4	132	0	17	0	10.5	0.8
GRL	75	0	1	1.4	0.6	59	0	0	0	4.6	0.8
GTI	200	0	17	2.8	1.3	192	0	11	0	8.4	0.6
HXL	179	1	6	1.4	-0.1	151	0	5	0	6.8	0.5
IBE	1314	0	7	1.6	0.2	1313	0	9	0	7.5	0.8
ICE	785	0	3	1.5	0.2	473	0	2	0	5.9	0.8
IWD	96	0	0	1.3	-0.2	93	1	1	0	4.8	0.1
KLM	621	1	4	1.5	-0.1	462	0	5	0	8.6	0.1
LAN	38	0	16	1.7	0.4	41	0	15	0	8.1	2.7
LDI	229	0	5	1.8	0.1	196	1	6	0	6.3	0.6
LOT	278	1	3	1.8	-0.2	164	0	1	0	6.0	0.1
LTU	583	0	6	1.7	-0.1	487	0	6	0	7.8	1.5
MMZ	22	0	5	1.6	-0.9	23	0	4	0	5.7	1.5
MON	41	0	0	1.2	-0.1	29	0	7	0	12.5	0.7
MPD	86	1	2	1.5	0.3	82	0	2	0	5.7	-0.1
MPH	493	1	2	1.5	-0.5	321	0	2	0	7.5	0.2
MYT	134	0	4	1.5	-0.2	85	0	7	0	9.2	1.8
NAO	92	2	11	1.6	0.1	81	1	15	0	6.6	0.2
NCA	26	0	4	1.7	0.6	24	0	4	0	6.7	-0.4
NOS	43	0	0	1.2	0.1	38	0	0	0	5.8	0.2
NVR	54	0	2	1.4	-0.3	27	0	4	0	7.0	0.3
NWA	1576	1	4	1.7	0.6	1519	0	8	0	9.9	0.1

OAE	230	0	5	1.1	-0.1	144	0	100	0	14.0	3.2
OOM	53	0	0	1.5	-0.9	47	0	2	0	6.8	0.4

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
PAC	171	0	11	1.8	-0.2	141	0	14	0	8.5	-0.2
PLM	99	1	5	2.1	1.2	89	0	3	0	6.9	0.9
RAM	245	2	4	1.6	0.1	158	1	100	0	10.7	0.5
RCH	345	0	100	3.0	-0.4	279	0	100	0	11.6	1.1
RRR	36	0	8	2.1	-0.5	37	0	5	0	5.5	1.0
RZO	145	0	4	1.8	-0.5	123	0	8	0	9.0	0.9
SEU	133	1	5	1.7	0.4	123	0	4	0	5.8	0.8
SLM	27	0	0	0.9	0.4	28	0	0	0	4.9	1.4
TAP	191	0	1	1.6	-0.4	152	1	7	0	9.5	0.5
TPA	29	0	0	0.9	0.4	28	0	0	0	4.6	0.1
TSC	60	0	2	1.6	-0.5	39	0	0	0	5.1	0.8
TSO	37	0	22	1.8	-1.3	37	0	22	0	7.5	0.3
TUB	86	1	16	2.7	1.4	66	0	12	0	8.8	0.4
UAE	28	0	4	2.0	0.5	28	0	7	0	8.1	0.9
UAL	69	0	70	1.9	-0.7	49	0	67	0	7.4	-0.4
UPS	827	0	50	1.6	0.5	799	0	50	0	6.9	0.2
USA	76	0	5	1.8	0.1	58	0	5	0	9.5	0.7
VIR	199	2	7	1.7	0.1	119	0	7	0	6.3	0.1
WOA	367	0	12	1.4	0.4	313	0	19	0	9.3	1.0
XLA	49	0	6	2.2	0.0	51	0	0	0	5.3	0.9

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
EU	24836	0	20	1.2	0.2	24836	0	19	0	4.3	0.5
TN	22	0	0	2.4	1.9	22	0	0	0	4.7	1.3
N	509	0	6	2.2	-0.1	335	0	3	0	6.3	0.9
US ACARS	18680	0	33	1.4	0.2	18680	0	28	0	4.7	0.4

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

```
 WMO   OBS                   NUM    NUM
IDENT TIME  ELM   LEV       OBS   GROSS      SD     RMS     BIAS


DASAP1  12    Z    100       3      0      24.1    29.1     16.3
EASAP5  12    Z    100       1      0       0.0    20.0    -20.0
EBUQ    12    Z    100      15      0      17.5    28.6     22.6
ELML7   00    Z    100       6      0      20.8    25.6     14.8
ELML7   12    Z    100       9      0      14.0    26.5     22.4

FQFL    00    Z    100       9      0      13.1    14.2      5.6
FQFL    12    Z    100       8      0      15.5    26.8     21.9
FQFM    00    Z    100       9      0       9.1     9.1      0.4
FQFM    12    Z    100       7      0       7.7    11.0      7.9
HPII    00    Z    100       4      0      18.9    36.3    -31.0

HPII    12    Z    100       4      0      20.0    36.7    -30.8
KRPD    00    Z    100       2      0      17.0    58.5     56.0
KRPD    12    Z    100       1      0       0.0    23.0     23.0
LDWR    00    Z    100      26      0      15.3    18.4    -10.1
LDWR    12    Z    100      27      0      14.0    14.0      0.6

OXYH2   00    Z    100       1      0       0.0    52.0     52.0
V2XM    00    Z    100       6      0      10.5    12.4     -6.5
V2XM    12    Z    100       3      0       7.0    11.2      8.7
WAAH    00    Z    100       5      0      12.5    32.3     29.8
WAAH    12    Z    100       7      0       7.7    23.0     21.7

WPKD    00    Z    100       5      0      45.2    46.5    -10.8
WPKD    12    Z    100       5      0      76.7    79.1    -19.6
ZCBF3   00    Z    100       9      0      13.3    16.9     10.3
ZCBF3   12    Z    100       9      0      24.5    32.0     20.6
ZCBP6   00    Z    100       9      0       5.2    38.2     37.9

ZCBP6   12    Z    100      12      0      14.2    41.2     38.7
03953   00    Z    100      26      0      10.8    17.0     13.1
03953   12    Z    100      27      0      13.4    23.3     19.0
04018   00    Z    100      26      0      19.0    19.1      1.8
04018   12    Z    100      24      0      23.2    24.0      6.3

04220   00    Z    100      25      0      38.0    39.3    -10.0
04220   12    Z    100      27      0      22.2    23.9     -8.9
04270   00    Z    100      24      0      15.4    21.3    -14.7
04270   12    Z    100      27      0      23.0    24.1     -7.2
04339   00    Z    100      26      0      13.3    13.4      1.3

04339   12    Z    100      27      0      12.8    12.8      0.0
04360   00    Z    100      22      0      13.2    13.5     -2.9
04360   12    Z    100      25      0      18.4    19.2     -5.3
08001   00    Z    100      14      0      13.9    19.2     13.1
08001   12    Z    100      19      1      10.1    28.7     26.8

08508   00    Z    100      18      0      12.6    30.6     27.9
08508   12    Z    100      25      0      12.8    36.4     34.1
08522   12    Z    100      23      0      10.3    22.0     19.4
08594   12    Z    100      21      0      11.5    19.3     15.5
71600   00    Z    100      27      0      14.8    15.2     -3.3

71600   12    Z    100      28      0      17.9    18.2      3.2
72201   00    Z    100      27      0       9.7    28.1     26.3
72201   12    Z    100      28      0      11.0    30.1     28.0
72402   00    Z    100      27      0      13.6    24.1     19.9
72402   12    Z    100      28      0      15.2    15.4      2.5

74494   00    Z    100      25      0      13.4    13.9      3.6
74494   12    Z    100      28      0      14.7    24.3    -19.4
78016   00    Z    100      26      0      11.5    37.9     36.2
78016   12    Z    100      24      0      16.1    40.9     37.6
```

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.1	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DASAP1	12	Z	500	3	0	6.1	12.0	10.3
EASAP5	12	Z	500	1	0	0.0	1.0	-1.0
EBUQ	12	Z	500	18	0	7.9	7.9	0.5
ELML7	00	Z	500	7	0	2.7	2.9	-1.0
ELML7	12	Z	500	9	0	3.9	4.0	0.9
FQFL	00	Z	500	9	0	4.4	6.0	4.1
FQFL	12	Z	500	9	0	11.8	12.2	3.3
FQFM	00	Z	500	9	0	6.0	14.3	-13.0
FQFM	12	Z	500	9	0	6.9	12.5	-10.4
HPII	00	Z	500	4	0	9.1	33.0	-31.8
HPII	12	Z	500	5	0	13.4	37.7	-35.2
KRPD	00	Z	500	2	0	6.0	37.5	37.0
KRPD	12	Z	500	2	0	2.0	15.1	15.0
LDWR	00	Z	500	27	0	9.6	9.7	-1.7
LDWR	12	Z	500	27	0	10.8	11.7	-4.6
OXYH2	00	Z	500	1	0	0.0	28.0	28.0
V2XM	00	Z	500	6	0	15.9	18.2	8.8
V2XM	12	Z	500	5	0	4.8	12.6	11.6
WAAH	00	Z	500	5	0	4.2	4.3	-0.6
WAAH	12	Z	500	7	0	6.0	8.6	-6.1
WPKD	00	Z	500	5	0	26.0	28.4	-11.6
WPKD	12	Z	500	5	0	36.5	38.9	-13.4
ZCBF3	00	Z	500	9	0	15.0	15.0	-1.1
ZCBF3	12	Z	500	10	0	18.6	19.2	4.7
ZCBP6	00	Z	500	10	0	5.4	29.2	28.7
ZCBP6	12	Z	500	12	0	10.3	36.2	34.7
03953	00	Z	500	27	0	7.6	8.1	2.9
03953	12	Z	500	27	0	7.3	8.6	4.6
04018	00	Z	500	27	0	10.5	10.6	1.6
04018	12	Z	500	27	0	11.7	11.8	1.3
04220	00	Z	500	25	0	15.4	15.5	-1.4
04220	12	Z	500	27	0	13.8	13.9	-1.4
04270	00	Z	500	26	0	7.8	8.4	3.3
04270	12	Z	500	28	0	11.9	11.9	0.3
04339	00	Z	500	27	0	13.1	13.7	3.9
04339	12	Z	500	27	0	13.2	13.3	1.2
04360	00	Z	500	24	0	9.7	10.3	3.7
04360	12	Z	500	26	0	11.6	11.8	2.2
08001	00	Z	500	18	0	12.2	12.9	4.4
08001	12	Z	500	20	1	8.8	11.6	7.4
08508	00	Z	500	18	0	8.6	9.3	-3.4
08508	12	Z	500	26	0	7.1	8.2	4.1
08522	12	Z	500	24	0	10.7	10.9	1.5
08594	12	Z	500	24	0	6.7	6.8	-1.3
71600	00	Z	500	27	0	7.0	7.2	-1.9
71600	12	Z	500	28	0	10.8	11.0	1.8
72201	00	Z	500	27	0	4.5	4.6	-0.8
72201	12	Z	500	28	0	4.5	5.0	-2.3
72402	00	Z	500	27	0	7.1	7.5	2.2
72402	12	Z	500	28	0	5.5	5.6	0.8
74494	00	Z	500	25	0	7.9	7.9	-0.8
74494	12	Z	500	28	0	7.2	8.9	-5.2
78016	00	Z	500	27	0	5.2	12.4	11.3
78016	12	Z	500	27	0	7.5	11.9	9.2

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DASAP1	12	V	100	3	0	0	3.2	1.9	0.2
EASAP5	12	V	100	1	0	0	2.2	1.7	1.4
EBUQ	12	V	100	14	0	64	8.8	-0.1	2.5
ELML7	00	V	100	6	0	100	9.5	6.0	2.4
ELML7	12	V	100	8	0	100	7.6	5.4	2.2
FQFL	00	V	100	9	0	0	2.7	0.6	0.7
FQFL	12	V	100	8	0	0	3.9	-0.1	1.0
FQFM	00	V	100	8	0	0	4.5	-0.1	0.2
FQFM	12	V	100	7	0	0	4.9	-0.6	1.1
HPII	00	V	100	4	0	0	5.4	0.3	-1.3
HPII	12	V	100	3	0	0	5.5	-0.5	-1.3
KRPD	12	V	100	1	0	100	13.7	-2.5	13.5
LDWR	00	V	100	26	0	3	4.7	-0.5	0.2
LDWR	12	V	100	27	0	0	3.1	-0.4	0.4
V2XM	00	V	100	6	0	0	4.4	1.9	1.1
V2XM	12	V	100	3	0	0	2.9	1.1	0.4
WAAH	00	V	100	4	0	100	9.4	-0.9	1.1
WAAH	12	V	100	5	0	100	8.8	3.8	1.5
WPKD	00	V	100	4	0	0	5.3	3.1	1.0
WPKD	12	V	100	5	0	0	3.4	1.4	0.4
ZCBF3	00	V	100	3	0	0	3.1	1.7	-0.1
ZCBF3	12	V	100	4	0	0	7.3	-1.8	1.0
ZCBP6	00	V	100	8	0	100	9.4	-3.6	0.2
ZCBP6	12	V	100	11	0	100	6.9	-3.1	-0.6
03953	00	V	100	25	0	0	4.2	-0.5	0.2
03953	12	V	100	25	0	0	3.5	0.3	0.6
04018	00	V	100	26	0	0	4.6	-0.1	-0.5
04018	12	V	100	22	0	0	3.2	0.8	-0.2
04220	00	V	100	24	0	0	3.8	0.1	-0.2
04220	12	V	100	21	0	0	4.2	-0.5	-0.7
04270	00	V	100	24	0	0	6.0	2.3	2.7
04270	12	V	100	24	0	0	6.3	0.9	2.2
04339	00	V	100	21	0	9	9.4	-2.6	-2.0
04339	12	V	100	24	0	0	4.7	-0.8	-1.7
04360	00	V	100	20	0	0	3.1	-0.4	0.2
04360	12	V	100	18	0	5	6.9	-1.9	-0.6
08001	00	V	100	11	0	0	5.5	0.7	0.9
08001	12	V	100	15	0	0	4.2	-1.9	-0.8
08508	00	V	100	7	0	0	2.5	1.2	-0.1
08508	12	V	100	14	0	0	2.6	0.3	-0.2
08522	12	V	100	23	0	0	3.7	-0.5	0.0
08594	12	V	100	19	0	100	8.7	-0.6	6.4
71600	00	V	100	27	0	0	3.6	-0.5	0.9
71600	12	V	100	26	0	0	4.2	-0.5	1.1
72201	00	V	100	27	0	0	4.9	0.2	1.7
72201	12	V	100	28	0	0	5.1	1.2	1.0
72402	00	V	100	27	0	0	3.9	-0.1	-0.6
72402	12	V	100	28	0	0	3.9	0.0	0.6
74494	00	V	100	24	0	100	4.2	-2.5	1.4
74494	12	V	100	26	0	100	3.6	-1.0	1.3
78016	00	V	100	24	0	0	5.2	0.4	0.5
78016	12	V	100	19	0	5	11.7	-2.1	0.5

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Feb 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.2	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DASAP1	12	V	500	3	0	0	3.4	-0.9	1.6
EASAP5	12	V	500	1	0	0	1.5	1.1	-1.0
EBUQ	12	V	500	15	0	73	10.2	-0.4	2.8
ELML7	00	V	500	6	0	100	12.3	7.3	5.3
ELML7	12	V	500	9	0	100	9.1	6.1	5.0
FQFL	00	V	500	8	0	0	3.4	0.6	0.5
FQFL	12	V	500	9	0	0	4.6	-0.2	0.0
FQFM	00	V	500	9	0	0	4.1	-1.2	0.8
FQFM	12	V	500	9	0	0	3.8	1.1	0.8
HPII	00	V	500	4	0	0	4.5	-0.2	-0.4
HPII	12	V	500	5	0	0	5.2	0.2	2.3
KRPD	12	V	500	2	0	100	9.6	2.8	2.3
LDWR	00	V	500	27	0	0	3.3	0.1	0.0
LDWR	12	V	500	27	0	0	4.5	-0.8	-0.2
V2XM	00	V	500	6	0	0	4.5	-0.9	1.6
V2XM	12	V	500	5	0	0	3.4	-0.6	-1.9
WAAH	00	V	500	4	0	100	9.7	-1.0	0.0
WAAH	12	V	500	6	0	100	8.0	3.9	2.0
WPKD	00	V	500	2	0	0	3.3	0.5	-0.2
WPKD	12	V	500	5	0	0	4.7	0.8	1.0
ZCBF3	00	V	500	3	0	0	10.8	-7.9	1.2
ZCBF3	12	V	500	5	0	0	2.4	-0.5	1.0
ZCBP6	00	V	500	9	0	100	7.5	-3.3	-0.6
ZCBP6	12	V	500	10	0	100	6.3	-2.1	0.1
03953	00	V	500	27	0	0	4.2	0.1	-0.4
03953	12	V	500	27	0	0	2.8	0.4	0.7
04018	00	V	500	27	0	0	5.0	1.0	-0.7
04018	12	V	500	27	0	0	3.5	1.1	-0.3
04220	00	V	500	25	0	0	4.5	0.3	-0.6
04220	12	V	500	26	0	0	5.3	-0.4	0.4
04270	00	V	500	26	0	0	4.0	0.1	-0.1
04270	12	V	500	28	0	0	4.3	-0.2	-1.0
04339	00	V	500	23	0	4	7.5	-1.5	-0.8
04339	12	V	500	26	0	0	4.8	-1.0	0.2
04360	00	V	500	23	0	0	5.3	0.4	1.3
04360	12	V	500	25	0	0	4.3	0.9	0.0
08001	00	V	500	18	0	0	4.9	0.3	0.7
08001	12	V	500	19	0	0	3.8	0.1	-0.8
08508	00	V	500	7	0	0	4.2	0.6	-0.7
08508	12	V	500	14	0	0	3.2	0.1	-0.1
08522	12	V	500	24	0	0	4.7	-1.3	1.5
08594	12	V	500	24	0	100	5.1	-1.4	3.0
71600	00	V	500	27	0	0	4.2	0.0	0.1
71600	12	V	500	26	0	0	3.5	0.2	1.1
72201	00	V	500	27	0	0	3.3	0.0	-0.5
72201	12	V	500	28	0	0	3.2	-0.7	-0.6
72402	00	V	500	27	0	0	2.9	0.5	-0.8
72402	12	V	500	28	0	0	3.5	0.6	-0.6
74494	00	V	500	24	0	0	2.8	-1.0	0.8
74494	12	V	500	28	0	0	3.4	-0.3	0.9
78016	00	V	500	26	0	0	4.3	1.1	-0.1
78016	12	V	500	27	0	3	6.3	-0.7	-0.1

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45